

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF GEORGIA
ATLANTA DIVISION

ORIGINAL

Softcard Systems, Inc.,)
)
Plaintiff,)
)
v.)
)
Target Corporation and VISA U.S.A. Inc.,)
)
Defendants.)
_____)

Civil Action File No.

1 03 CV 3585

FILED IN CLERK'S OFFICE
U.S. DISTRICT COURT
NOV 25 2003
LUTHER D. [Signature]
By: [Signature] Deputy Clerk

JHS

**COMPLAINT FOR
PATENT INFRINGEMENT AND INJUNCTIVE RELIEF**

Plaintiff Softcard Systems, Inc. ("Softcard") hereby makes the following
allegations in support of its claims for relief:

THE PARTIES

1. Softcard is a Delaware corporation with its principal place of business at 1592 Mars Hill Road, Suite B, Watkinsville, Georgia 30677.
2. Upon information and belief, Target Corporation ("Target") is a Minnesota corporation with its principal place of business at 1000 Nicollet Mall, Minneapolis, Minnesota, 55403. Target's local agent for service of process is C.T. Corporation System, 1201 West Peachtree Street, N.E., Atlanta, Georgia, 30361.

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Title VII NYC
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3. Upon information and belief, Visa U.S.A. Inc. (“Visa”) is a Delaware corporation with its principal place of business at 900 Metro Center Boulevard, Foster City, California, 94404. Visa’s local agent for service of process is C.T. Corporation System, 1201 West Peachtree Street, N.E., Atlanta, Georgia, 30361.

JURISDICTION AND VENUE

4. This Court has subject matter jurisdiction over this controversy under 28 U.S.C. §§ 1331 and 1338(a).

5. Upon information and belief, this action arises out of the transaction of business, commission of tortious injuries, and other activities of Target and Visa within the judicial district of the United States District Court for the Northern District of Georgia and elsewhere. Accordingly, upon information and belief, Target and Visa are subject to personal jurisdiction in Georgia and the judicial district of this Court.

6. Upon information and belief, venue is proper in this judicial district pursuant to 28 U.S.C. § 1391(b) & (c) and § 1400(b).

7. In this action, Softcard seeks damages and injunctive relief against Target and Visa for acts of patent infringement in violation of the Patent Act of the United States, 35 U.S.C. §§ 1, *et seq.*

**COUNT ONE
INFRINGEMENT OF THE '038 PATENT**

8. U.S. Patent No. 6,012,038 (“the ‘038 patent”), titled “System and Method for Controlling Distribution of Coupons”, was duly and legally issued by the United States Patent and Trademark Office on January 4, 2000. A copy of the ‘038 patent is attached hereto as Exhibit A.

9. Softcard owns the ‘038 patent and has the right to sue for infringement thereof.

10. Upon information and belief, Target and Visa have and are infringing, inducing the infringement of, or contributing to the infringement of one or more claims of the ‘038 Patent in violation of 35 U.S.C. § 271 by making, using, selling, and/or offering to sell the invention patented in the ‘038 patent.

**COUNT TWO
INFRINGEMENT OF THE '526 PATENT**

11. U.S. Patent No. 6,067,526 (“the ‘526 patent”), titled “System and Method for Distributing Coupons Through a System of Computer Networks”, was duly and legally issued by the United States Patent and Trademark Office on May 23, 2000. A copy of the ‘526 patent is attached hereto as Exhibit B.

12. Softcard owns the ‘526 patent and has the right to sue for infringement thereof.

13. Upon information and belief, Target and Visa have and are infringing, inducing the infringement of, or contributing to the infringement of one or more claims of the '526 Patent in violation of 35 U.S.C. § 271 by making, using, selling, and/or offering to sell the invention patented in the '526 patent.

**COUNT THREE
INFRINGEMENT OF THE '135 PATENT**

14. U.S. Patent No. 5,890,135 ("the '135 patent"), titled "System and Method for Displaying Product Information in a Retail System", was duly and legally issued by the United States Patent and Trademark Office on March 30, 1999. A copy of the '135 patent is attached hereto as Exhibit C.

15. Softcard owns the '135 patent and has the right to sue for infringement thereof.

16. Upon information and belief, Target and Visa have and are infringing, inducing the infringement of, or contributing to the infringement of one or more claims of the '135 Patent in violation of 35 U.S.C. § 271 by making, using, selling, and/or offering to sell the invention patented in the '135 patent.

PRAYER FOR RELIEF

WHEREFORE, as a direct and proximate result of Target's and Visa's infringement of any and all of the '038, '526, and '135 patents, Softcard has been

and continues to be damaged in its business and property, including, among other ways, the loss of substantial profits.

WHEREFORE, by reason of Target's and Visa's infringing acts, Target and Visa have caused, are causing, and unless enjoined and restrained by this Court, will continue to cause Softcard great and irreparable injury to, among other things, the good will and business reputation of Softcard and its business relations with its customers, and will continue to infringe, contribute to the infringement of, and induce others to infringe the patents-in-suit, all of which cannot be adequately compensated or measured in money. Softcard has no adequate remedy at law for this harm.

WHEREFORE, Target's and Visa's infringement of any and all of the '038, '526, and '135 patents is, has been, and continues to be committed with full knowledge of Softcard's rights under these patents, and in willful, wanton and deliberate disregard thereof.

WHEREFORE, Softcard prays for judgment against Target and Visa as follows:

(a) That Target and Visa, their officers, agents, servants, and employees, and all persons acting in concert with them, and each of them, be preliminarily and

permanently enjoined from infringing, contributing to, and inducing others to infringe U.S. Patent Nos. 6,012,038; 6,067,526; and 5,890,135;

(b) That U.S. Patent Nos. 6,012,038; 6,067,526; and 5,890,135 be adjudged to be infringed;

(c) That Softcard be awarded damages under 35 U.S.C. § 284 adequate to compensate it for patent infringement, which are in no event less than a reasonable royalty, together with interest and costs as fixed by the Court;

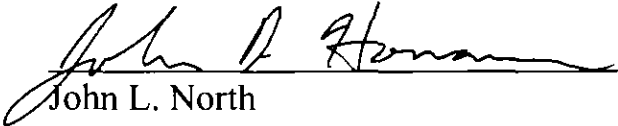
(d) That the damages awarded to Softcard in connection with Target's and Visa's willful patent infringement be trebled pursuant to 35 U.S.C. § 284;

(e) That prejudgment interest be assessed on all damages;

(f) That Softcard be awarded its reasonable attorney's fees and costs of suit under 35 U.S.C. § 285; and

(g) That Softcard be awarded such other relief as the Court may deem just and proper.

DATED: November 25, 2003.



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EXHIBIT / ATTACHMENT

A

(To be scanned in place of tab)

US00012038A

United States Patent [19]
Powell

[11] **Patent Number:** **6,012,038**
 [45] **Date of Patent:** ***Jan. 4, 2000**

[54] **SYSTEM AND METHOD FOR CONTROLLING DISTRIBUTION OF COUPONS**

[75] Inventor: **Ken R. Powell**, Athens, Ga.

[73] Assignee: **SoftCard Systems, Inc.**, Watkinsville, Ga.

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[*] Notice: This patent is subject to a terminal disclaimer.

[21] Appl. No.: **09/100,868**

[22] Filed: **Jun. 22, 1998**

Related U.S. Application Data

[63] Continuation of application No. 08/603,482, Feb. 20, 1996, Pat. No. 5,806,044.

[51] Int. Cl.⁷ **G06F 17/60**

[52] U.S. Cl. **705/14; 709/200; 709/213; 709/219**

[58] **Field of Search** 235/375, 383, 235/385; 364/400; 370/400, 401; 395/200.3, 200.31, 200.43, 200.49, 200.6, 200.79; 705/10, 14, 20, 24, 400; 709/200, 201, 213, 219, 230, 249; 700/90

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(List continued on next page.)

Primary Examiner—Edward R. Cosimano

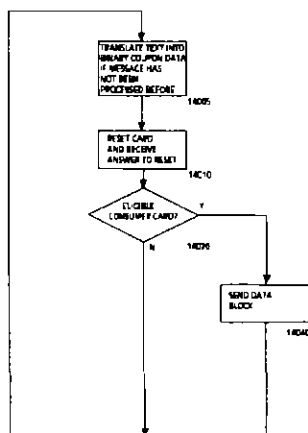
Attorney, Agent, or Firm—Jerome D. Jackson

[57]

ABSTRACT

A system for dispensing and redeeming the electronic discount coupons. The system includes a personal computer (PC) having hardware and software for receiving an electronic coupon from the system of computer networks, translating the received coupon into a binary format, and sending the binary-formatted coupon to a card-writing device. The card-writing device writes the coupon data onto a portable customer card ("smart card") approximately the size of a credit card. Subsequently, the customer goes to the store with the card. Upon completion of shopping, the customer redeems the electronic coupons at the checkout area, by inserting the card into the checkout station. During checkout, the customer is credited with the value of a coupon when UPC data from a bar code reader corresponds to a coupon stored on the card.

39 Claims, 21 Drawing Sheets



6,012,038

Page 2

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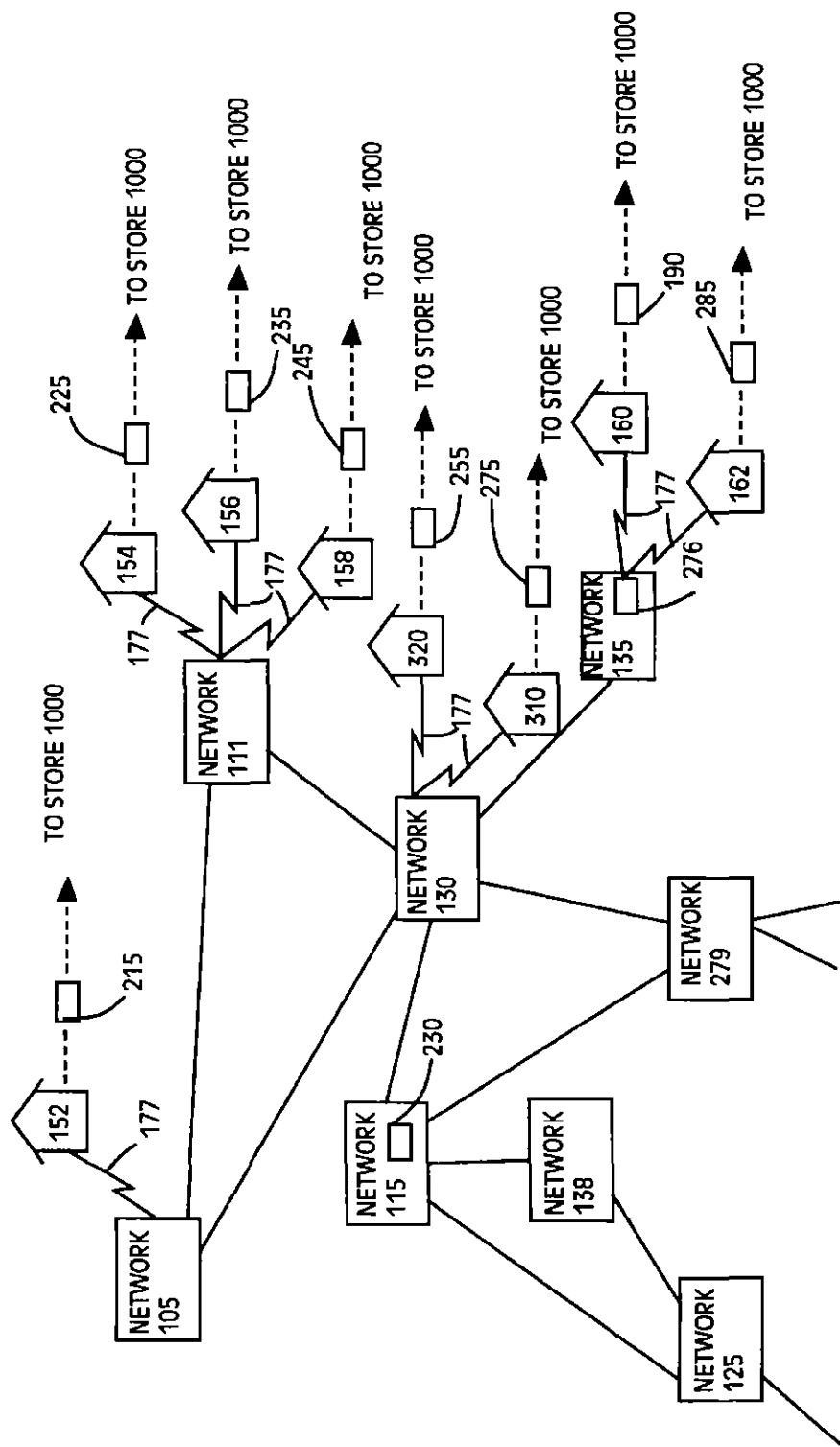
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Fig. 1A



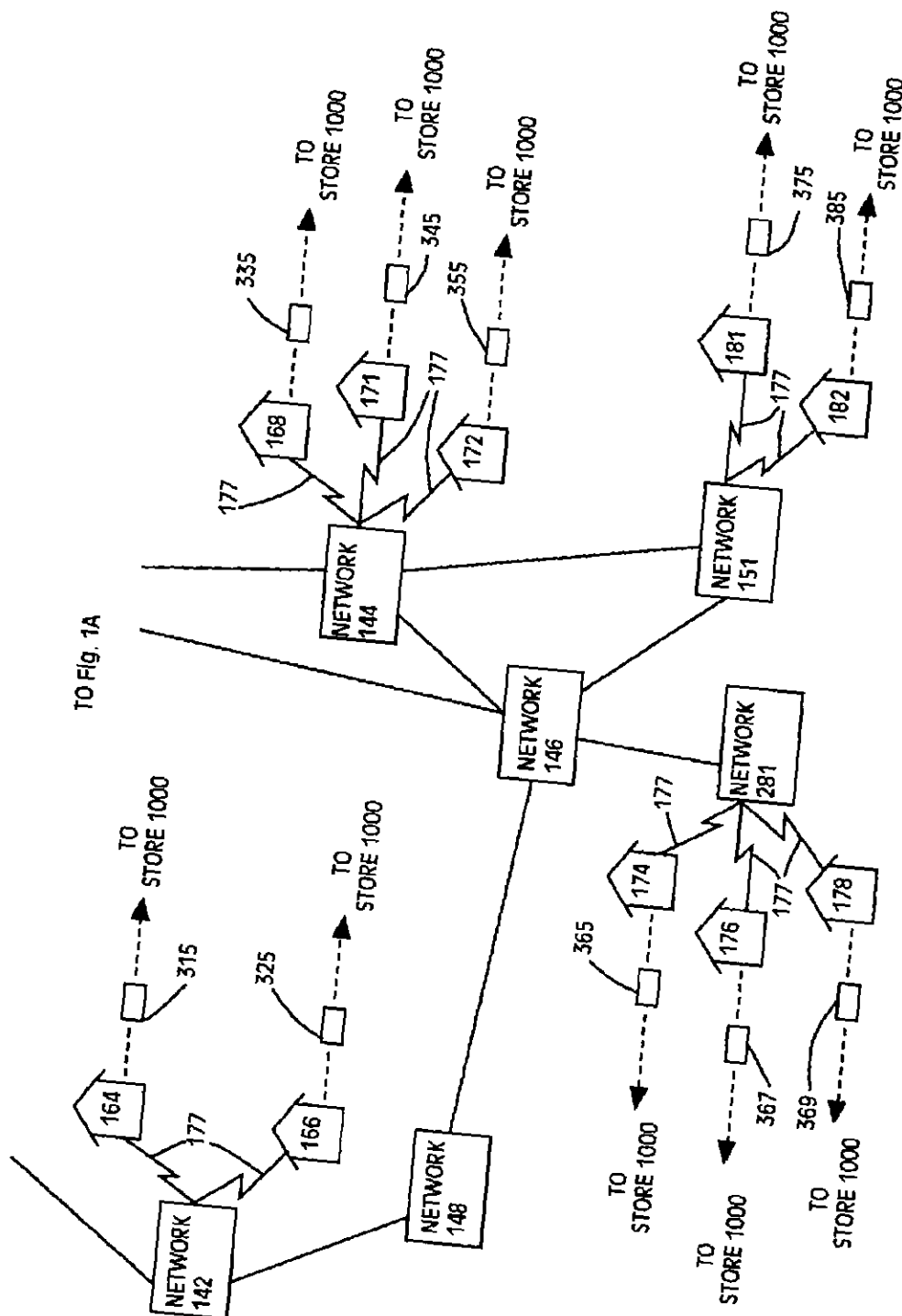
TO Fig. 1B

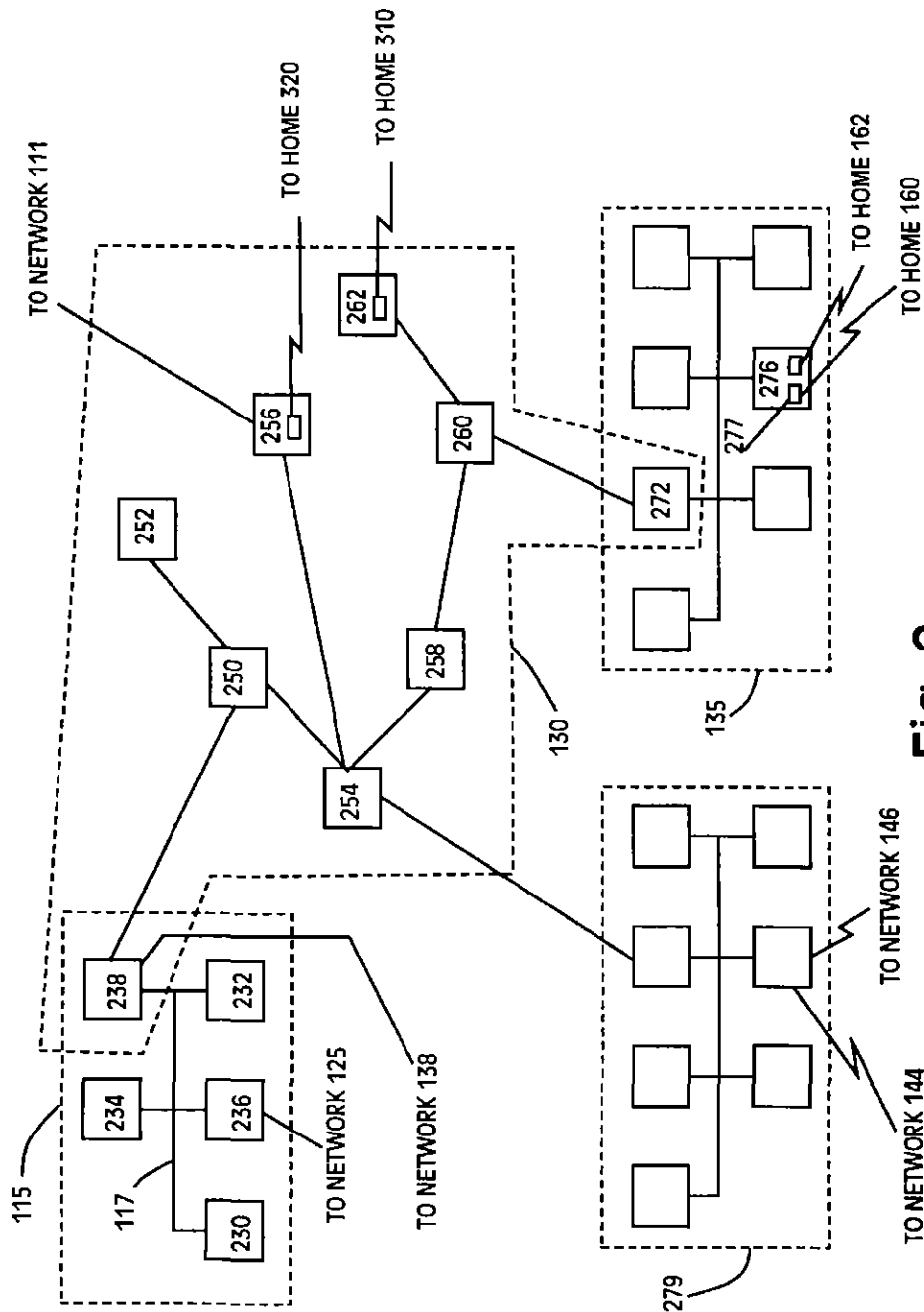
U.S. Patent

Jan. 4, 2000

Sheet 2 of 21

6,012,038





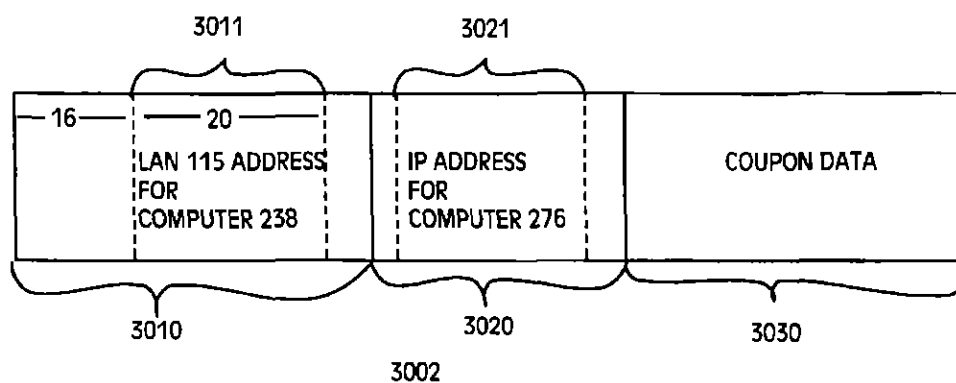


Fig. 3A

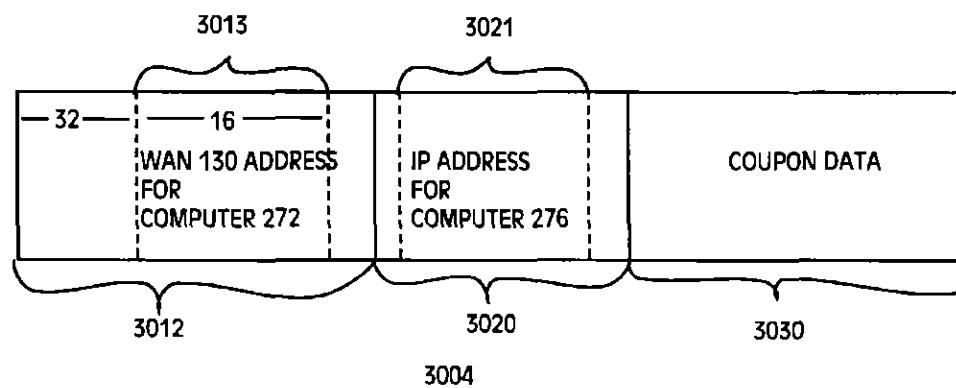


Fig. 3B

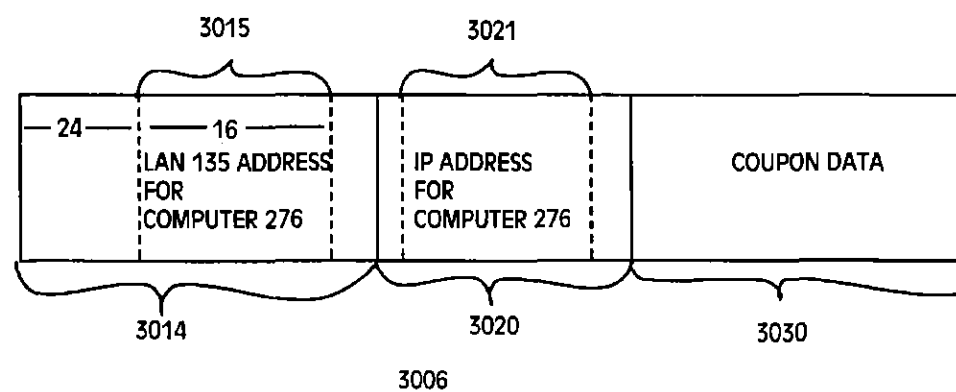


Fig. 3C

U.S. Patent

Jan. 4, 2000

Sheet 5 of 21

6,012,038

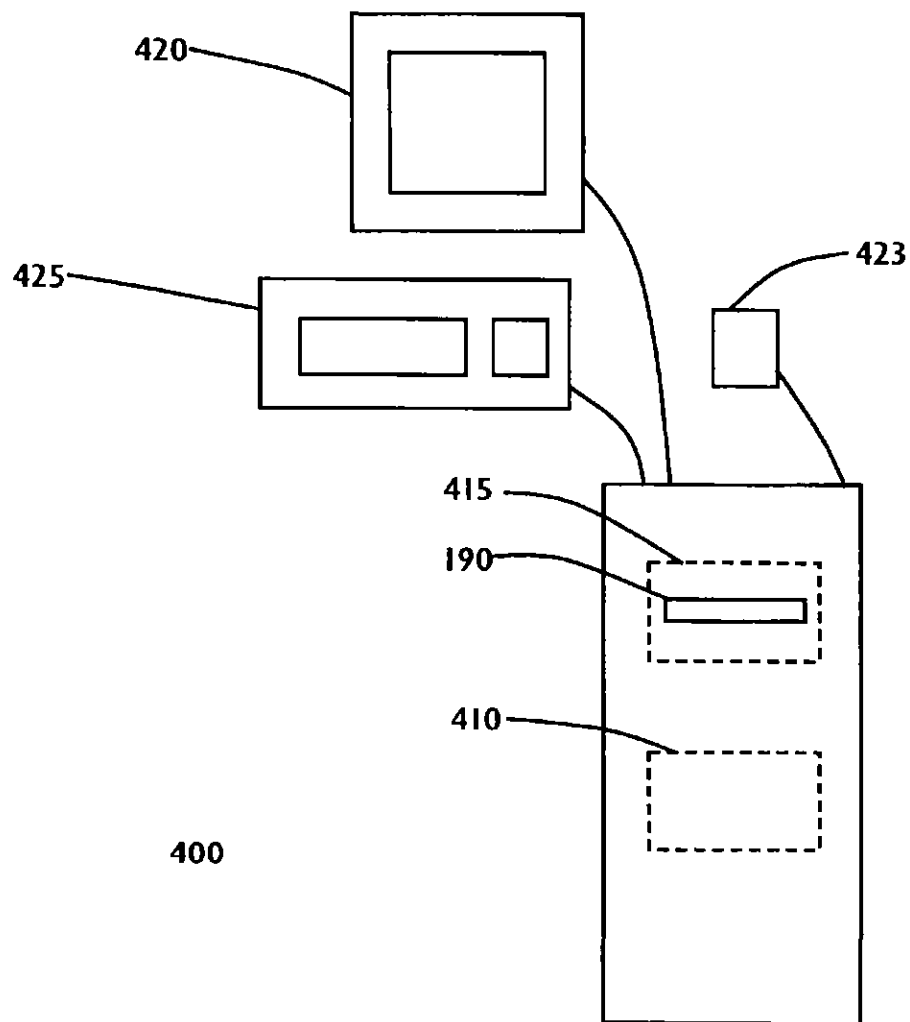


Fig. 4

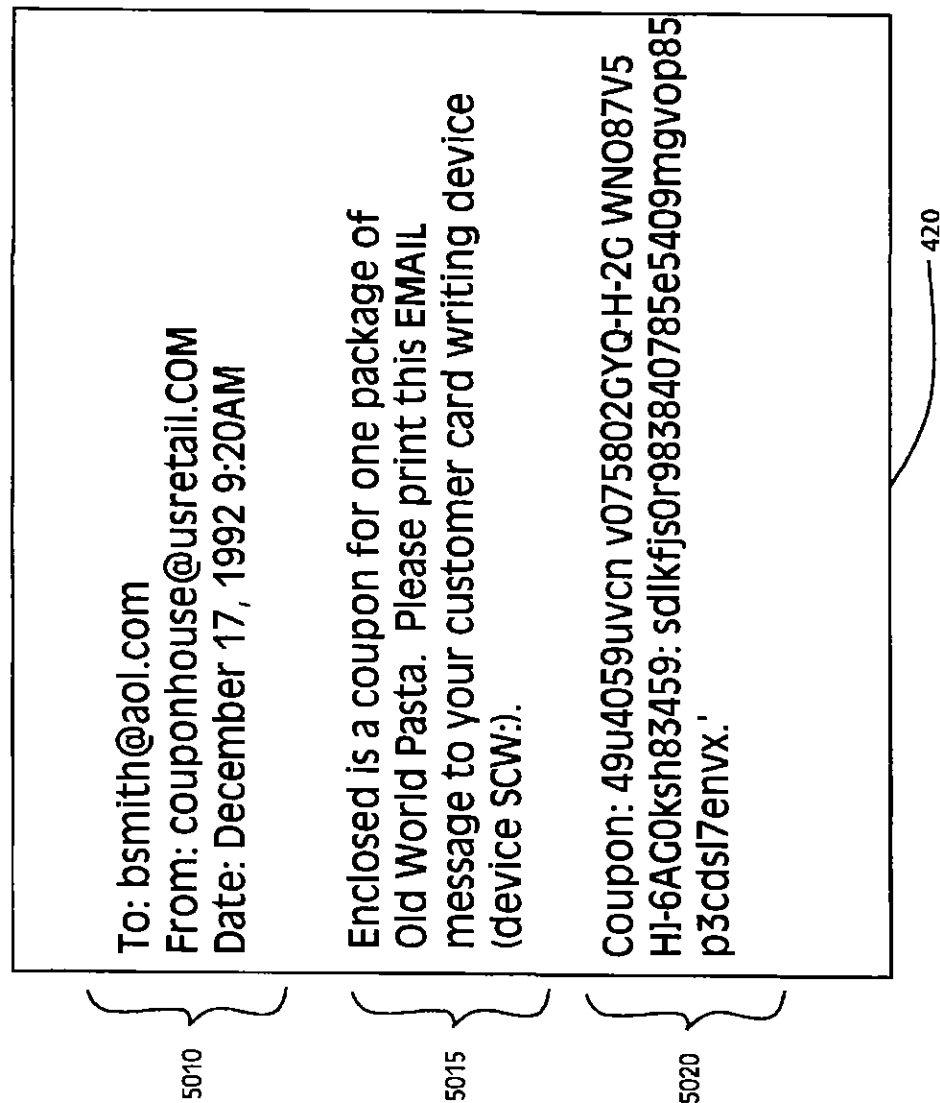


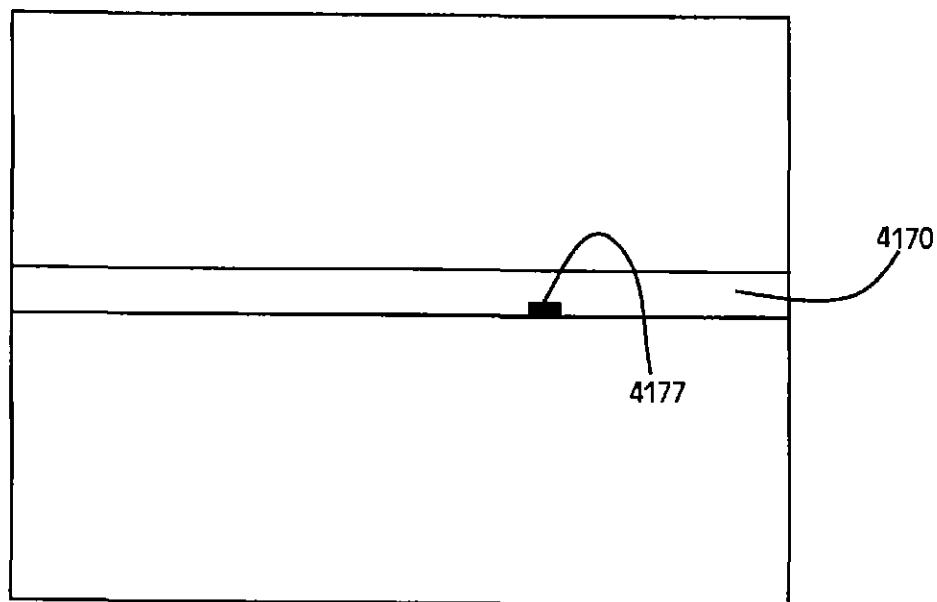
Fig. 5

U.S. Patent

Jan. 4, 2000

Sheet 7 of 21

6,012,038



415

Fig. 6

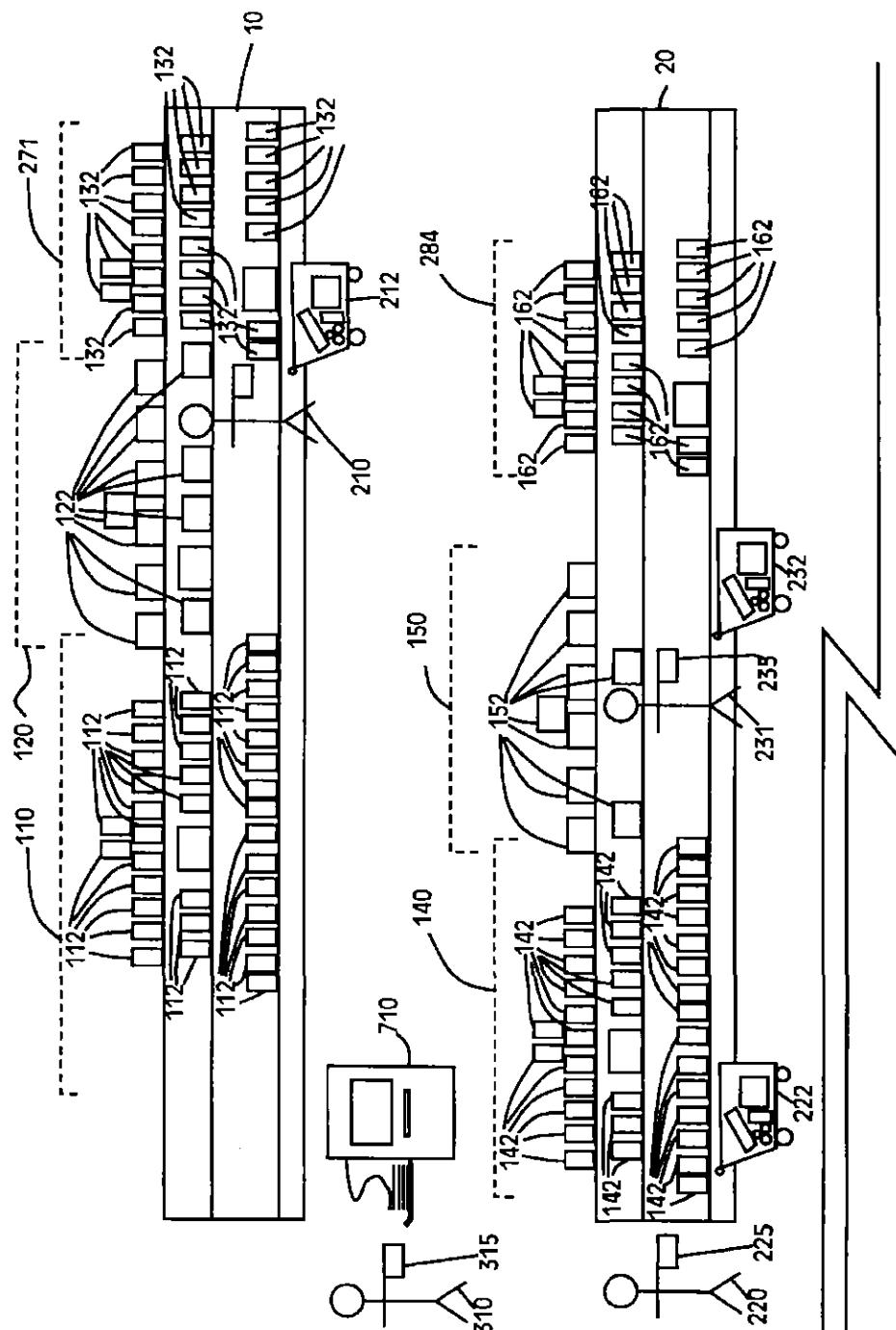


Fig. 7A

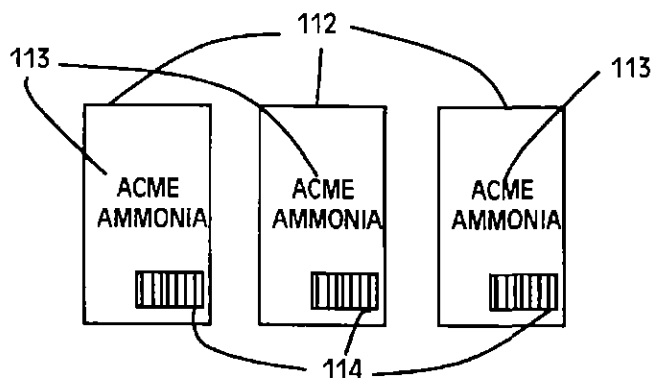


Fig. 8A

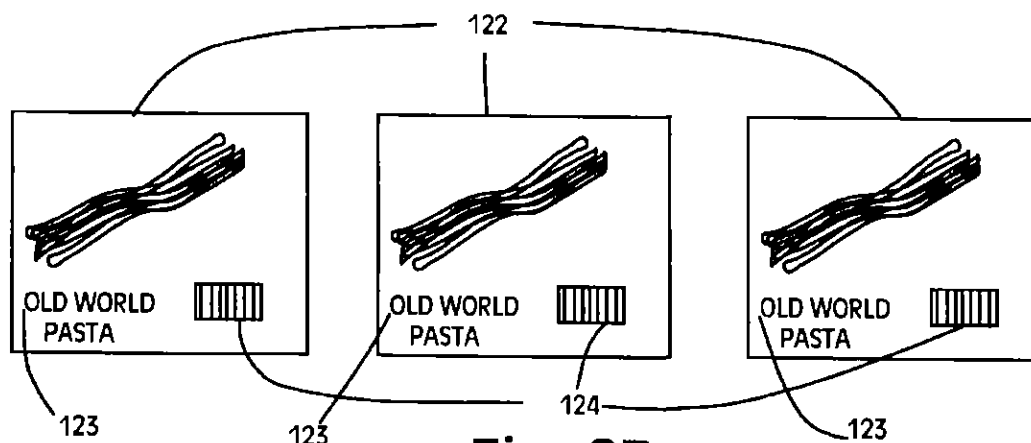


Fig. 8B

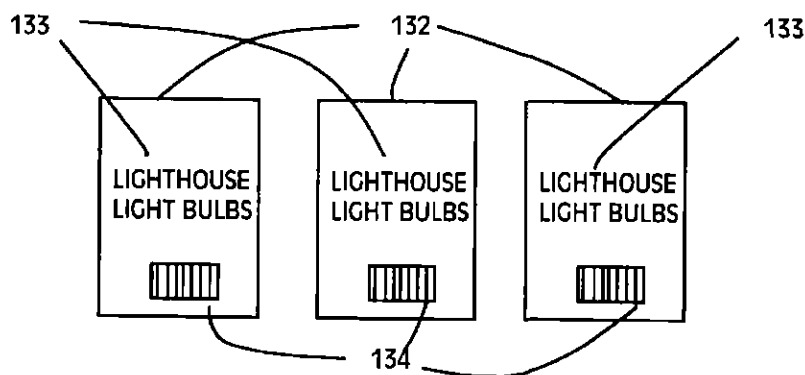


Fig. 8C

U.S. Patent

Jan. 4, 2000

Sheet 11 of 21

6,012,038

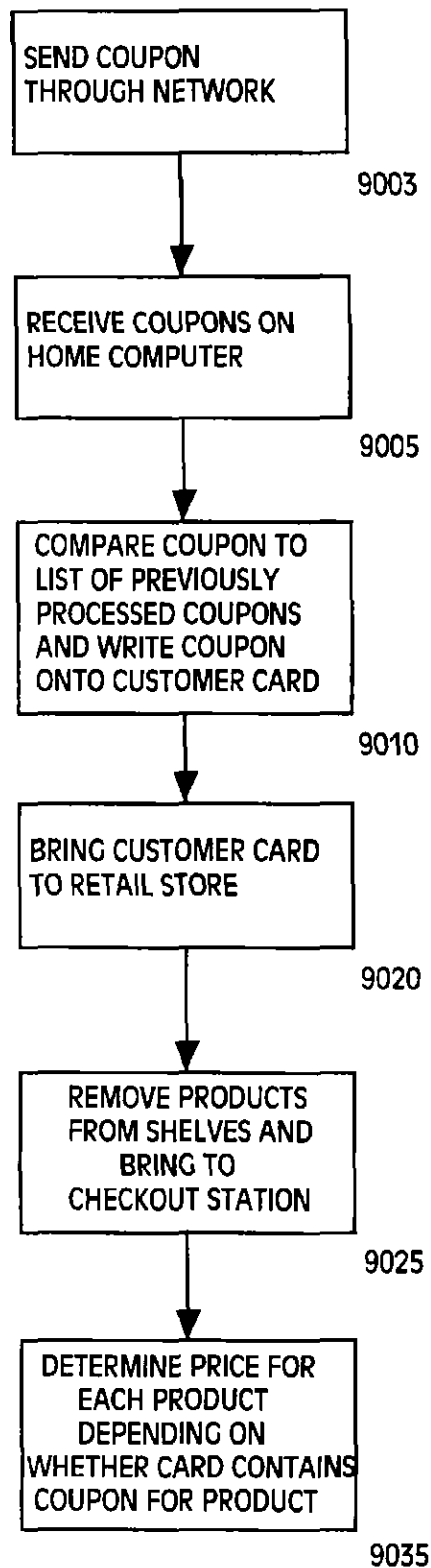


Fig. 9

U.S. Patent

Jan. 4, 2000

Sheet 12 of 21

6,012,038

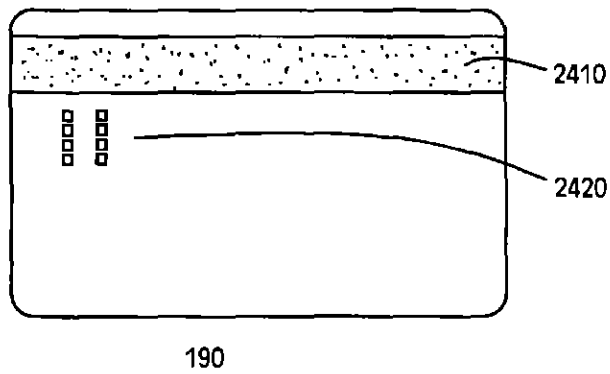


Fig. 10A

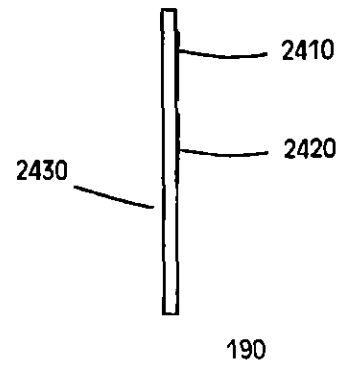


Fig. 10B

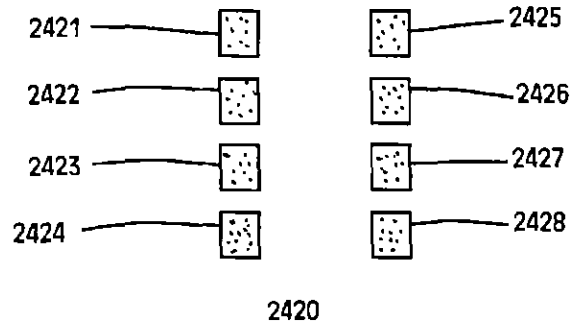


Fig. 10C

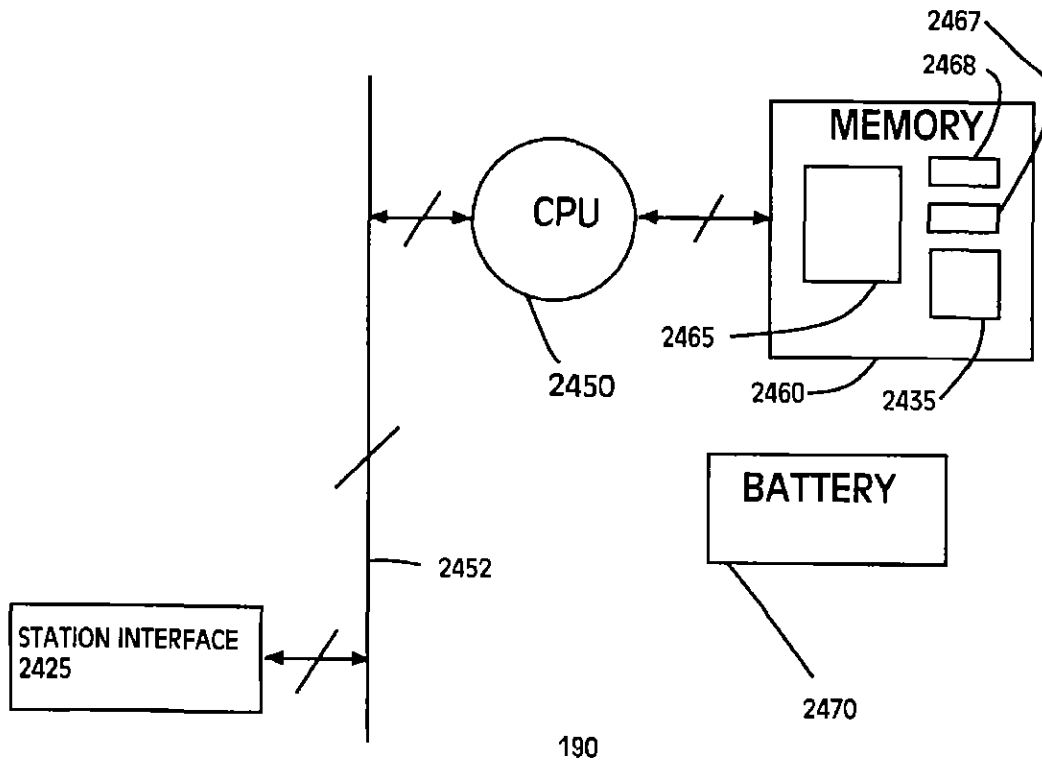


Fig. 11

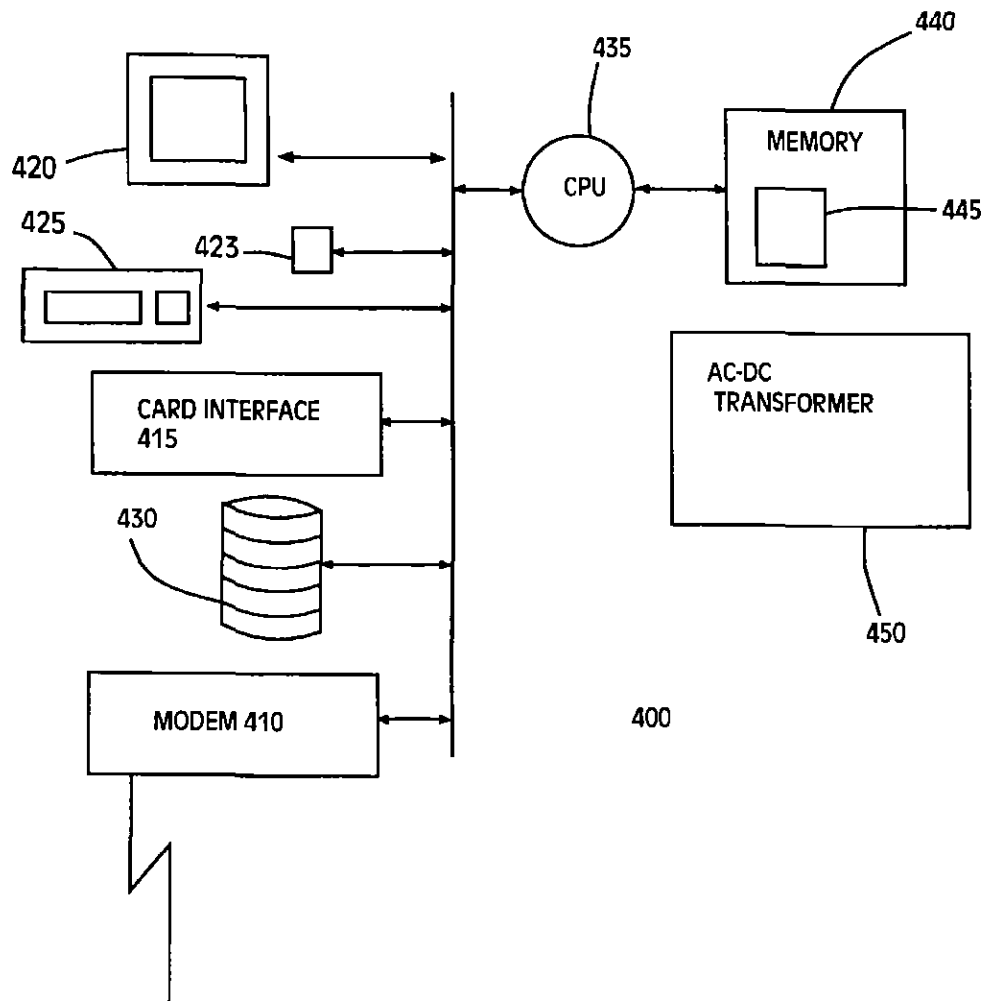


Fig. 12

U.S. Patent

Jan. 4, 2000

Sheet 15 of 21

6,012,038

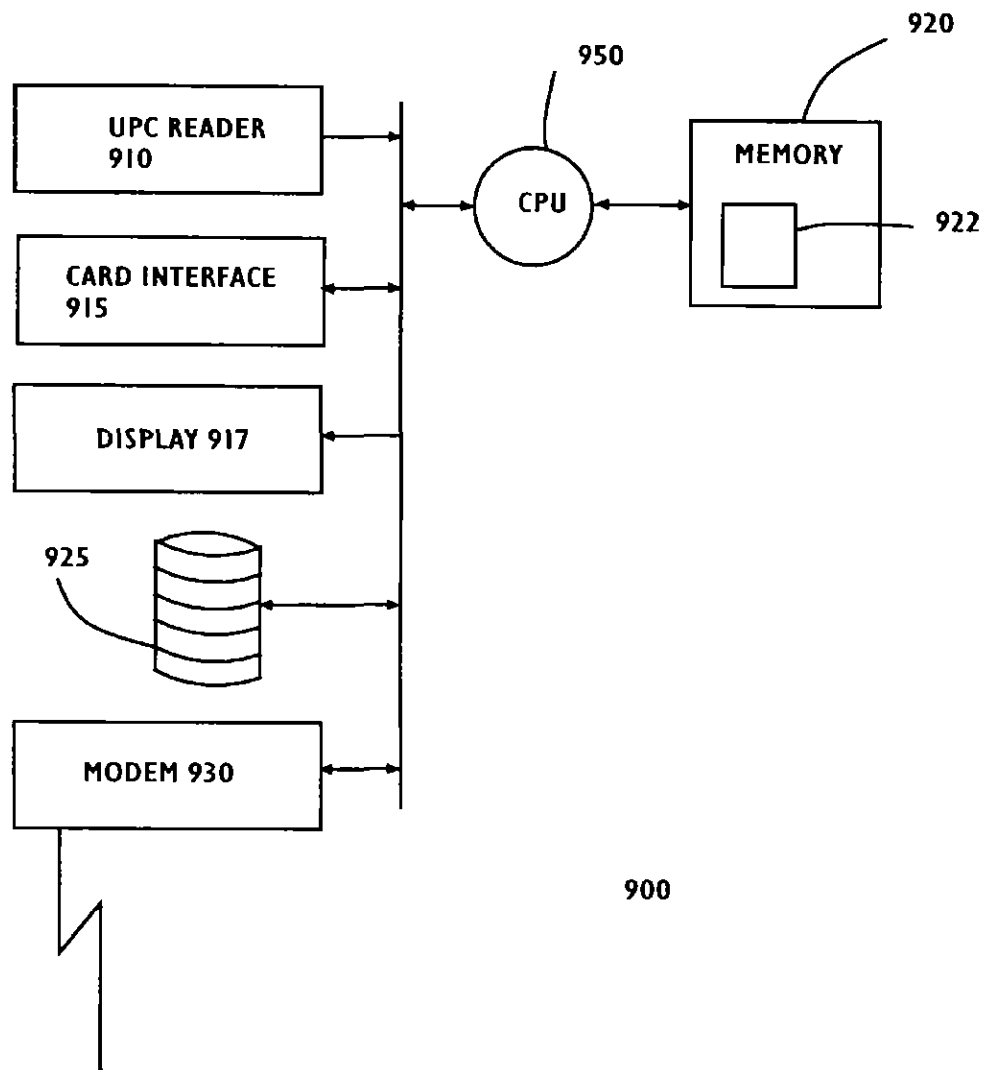


Fig. 13

U.S. Patent

Jan. 4, 2000

Sheet 16 of 21

6,012,038

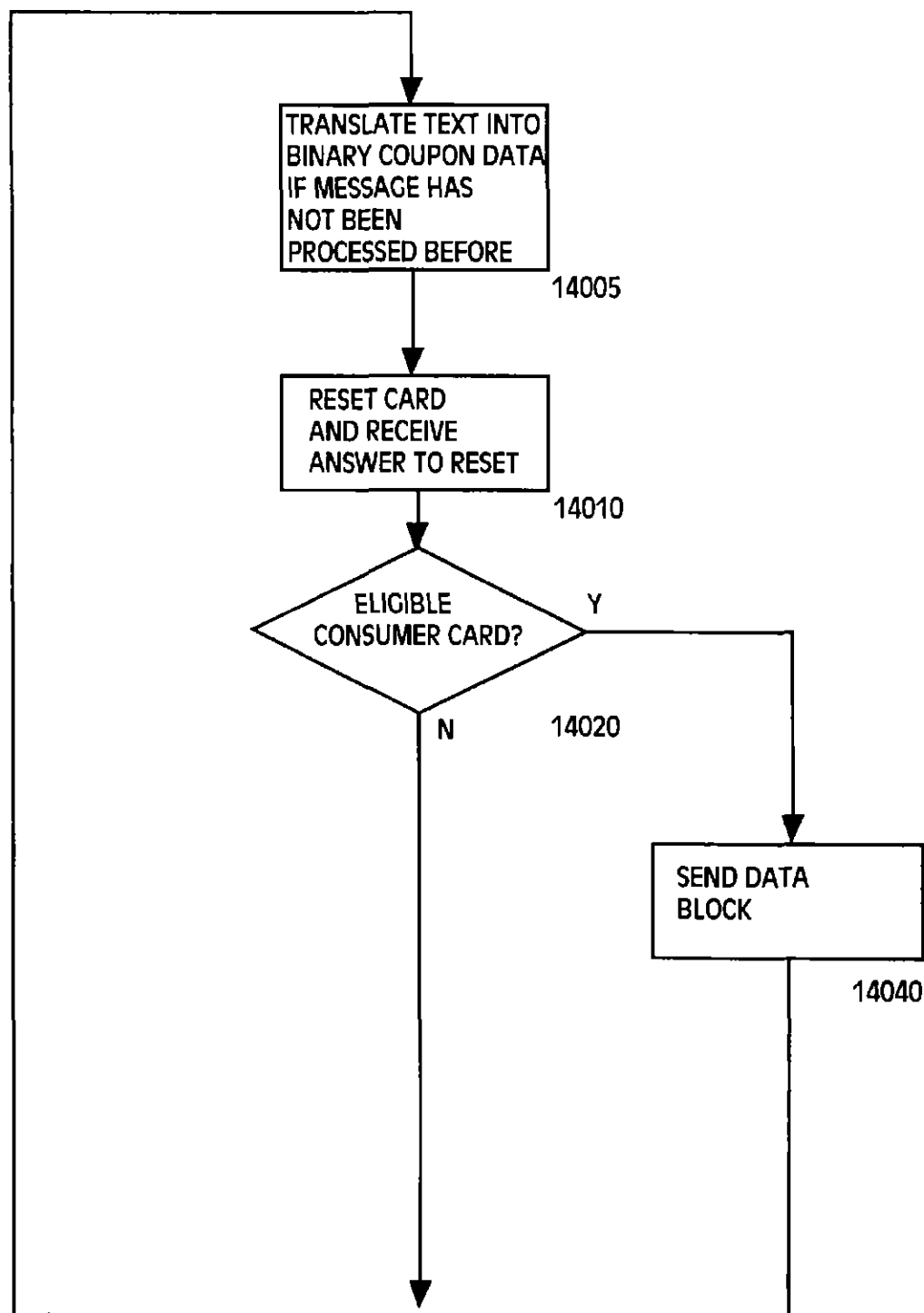


FIG. 14

U.S. Patent

Jan. 4, 2000

Sheet 17 of 21

6,012,038

30: 7170312350
|
200
7170312780
|
50

2435

Fig. 15A

30: 7170312350
|
200
7170312780
|
50
7170312682
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150

2435

Fig. 15B

U.S. Patent

Jan. 4, 2000

Sheet 18 of 21

6,012,038

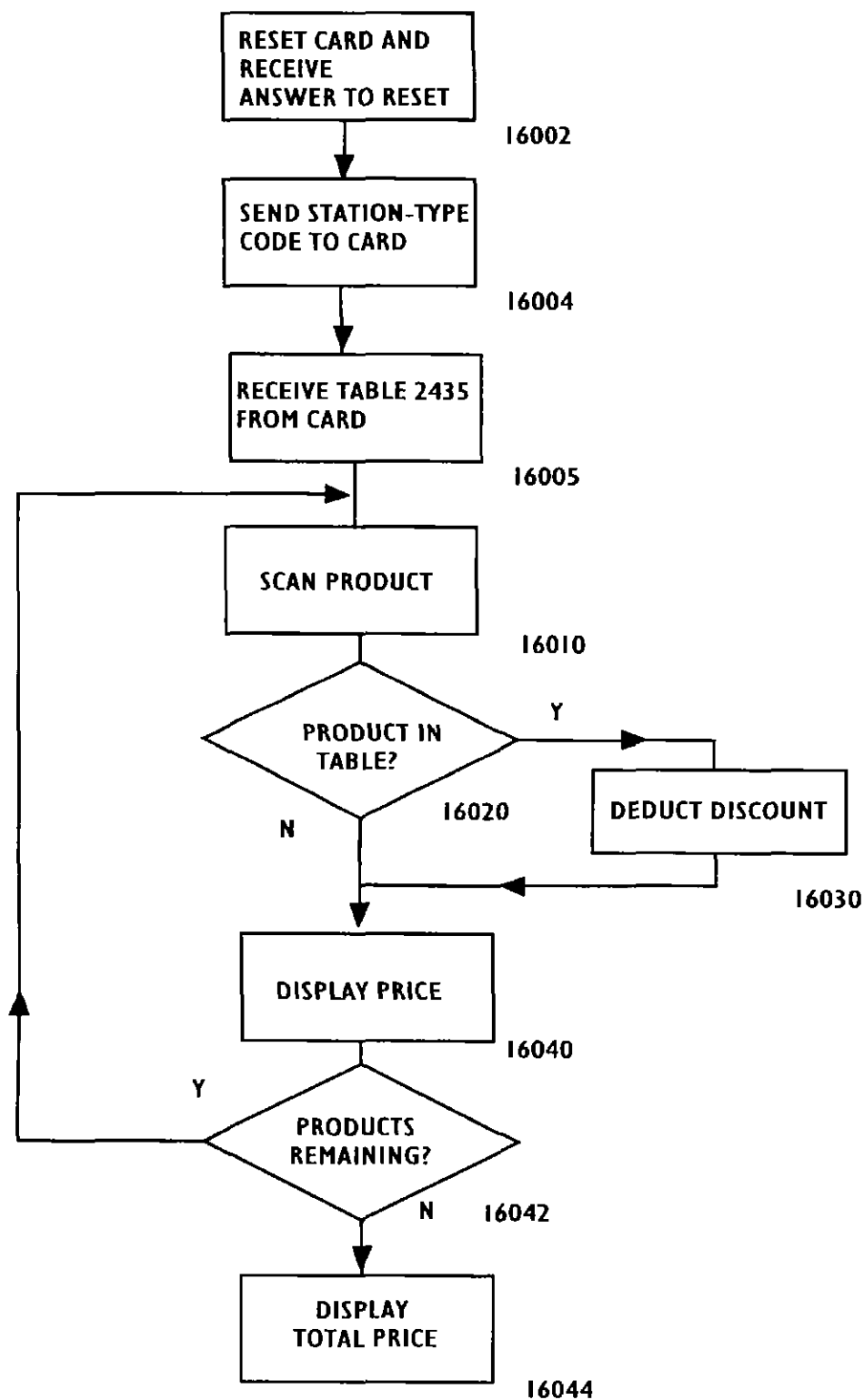


FIG. 16

U.S. Patent

Jan. 4, 2000

Sheet 19 of 21

6,012,038

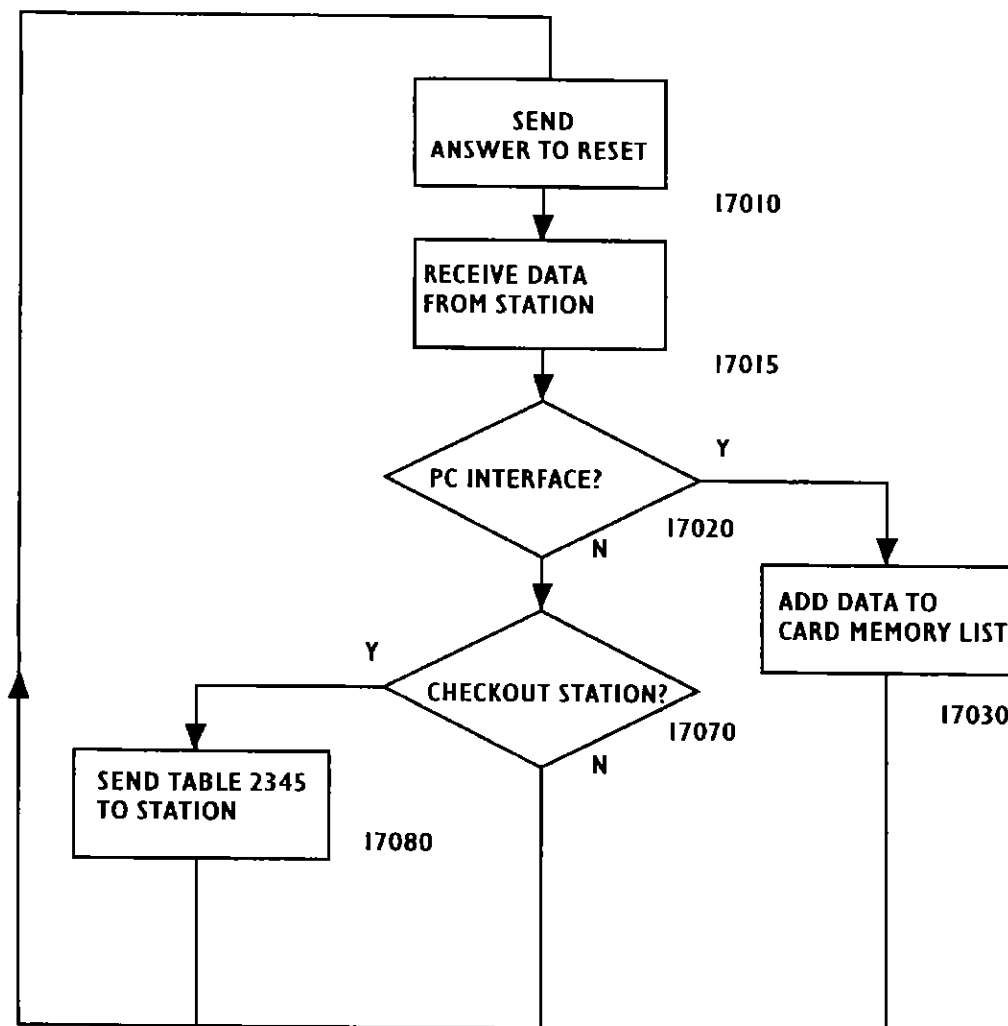
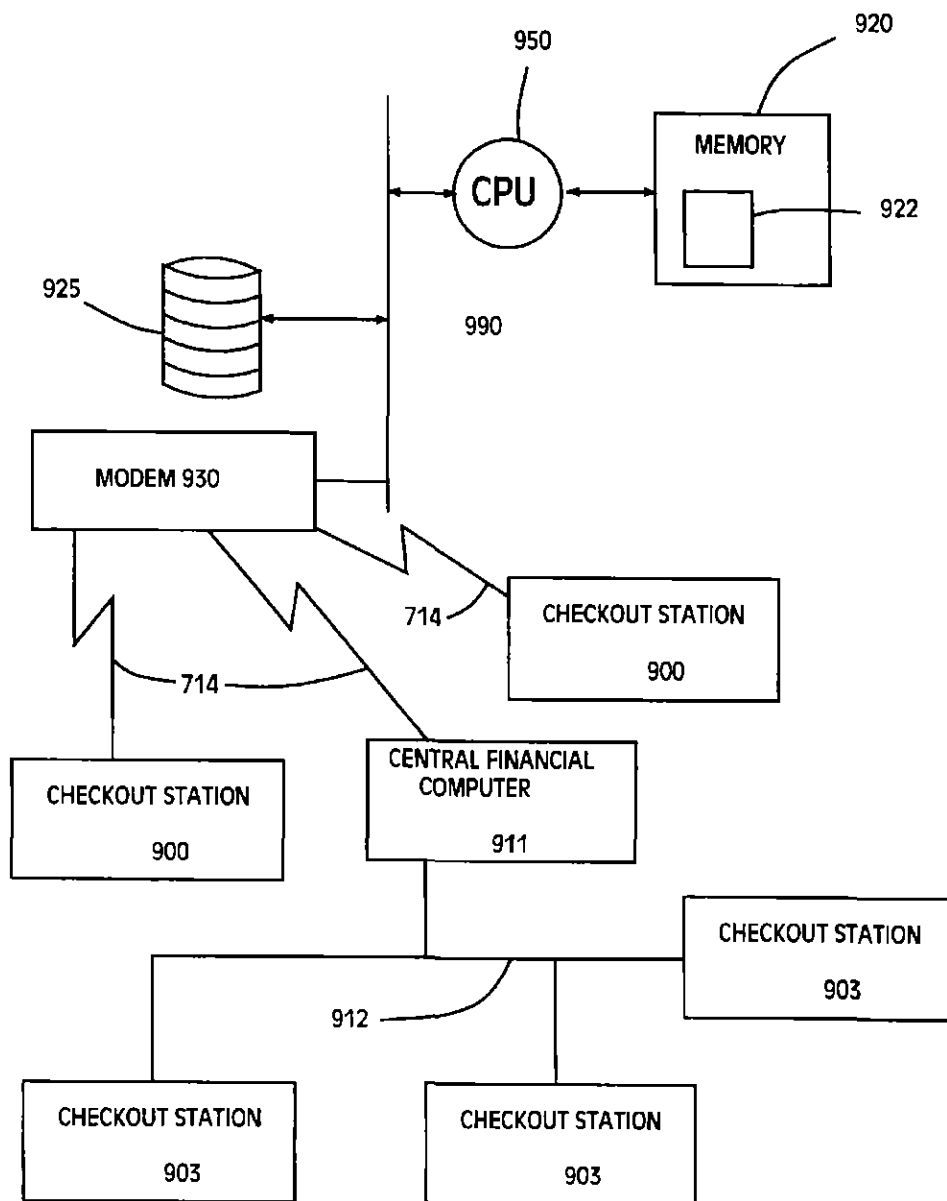


FIG. 17

**Fig. 18**

U.S. Patent

Jan. 4, 2000

Sheet 21 of 21

6,012,038

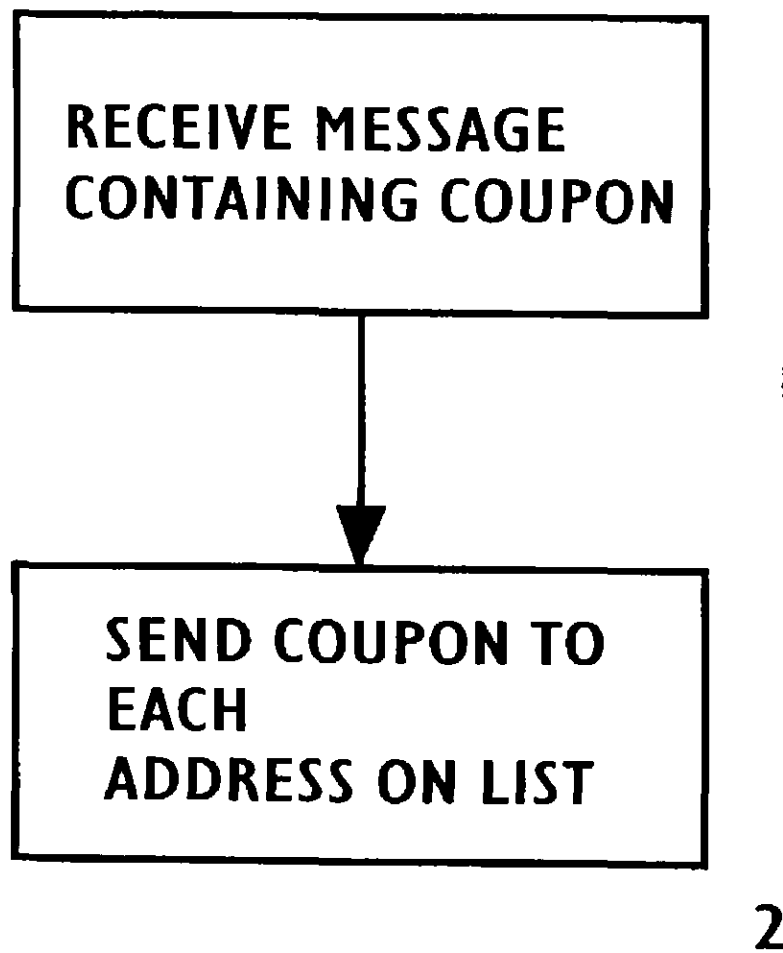


FIG. 19

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1

SYSTEM AND METHOD FOR CONTROLLING DISTRIBUTION OF COUPONS

This Application is a continuation of application Ser. No. 08/603,482 of KEN R. POWELL filed Feb. 20, 1996 for SYSTEM AND METHOD FOR DISTRIBUTING COUPONS THROUGH A SYSTEM OF COMPUTER NETWORKS, now U.S. Pat. No. 5,806,044 issued Sep. 8, 1998, the contents of which are hereby incorporated by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to a retail system and, more particularly, to a system and method for distributing discount coupons through a system of computer networks.

2. Description of Related Art

Discount coupons are a popular means to stimulate sales of products such as grocery store items. In 1992, approximately 310 billion coupons were distributed and 7.7 billion coupons were redeemed, saving customers \$4 billion. It has been estimated that in-store couponing coupled with advertising increases sales by 544%.

A typical marketing scheme involves placing coupons in a newspaper, by printing the coupons in the newspaper or by inserting coupon inserts into the newspaper, and allowing customers to bring the printed coupons to a store for redemption. One problem with this scheme is that the redemption rate is typically only a few percent of the coupons printed, the unredeemed coupons representing an overhead associated with this scheme. To alleviate this overhead, another marketing scheme involves distributing the coupons in the store, thereby avoiding the cost of printing coupons in a newspaper, and capitalizing on the fact that 66% of buyer decisions are made at the time of product purchase. Both the in-store scheme and the newspaper scheme, however, are susceptible to fraud by an unscrupulous retailer that requests reimbursement payments by presenting unredeemed coupons to the clearing house. Other schemes include delivering coupons to customers through the mail, distributing coupons in or on the product package, and distributing coupons at checkout. All of these schemes have an overhead cost of handling the coupons and of sending the redeemed coupons to a clearing house to enable product manufacturers to reimburse retailers for the reduction in proceeds resulting from coupon redemptions.

SUMMARY OF THE INVENTION

According to an aspect of the present invention, in a system including a computer network, a plurality of customers, and a computer that sends a coupon signal in a first signal on the computer network, the first signal including a respective destination signal corresponding to a customer in the plurality of customers, a coupon processing system comprises a receiver that receives the coupon signal sent in the first signal; a determiner that determines whether a coupon, corresponding to the coupon signal, has been previously processed; and a transmitter that conditionally transmits the coupon, if the coupon has not been previously processed.

According to another aspect of the present invention, in a system including a computer network, and a plurality of customers, a method comprises the steps, performed for a customer in the plurality of customers, of sending a first

2

signal on the computer network, the first signal including a respective destination signal corresponding to the customer, and a coupon signal; receiving the coupon signal; after the receiving step, determining whether a coupon, corresponding to the coupon signal, has been previously processed; and conditionally processing the coupon, if the coupon has not been previously processed.

BRIEF DESCRIPTION OF THE DRAWINGS

According to yet another aspect of the present invention, there is a coupon system for a system including a computer network, and a plurality of customers. The coupon system comprises means for sending a first signal on the computer network, the first signal including a respective destination signal corresponding to a customer in the plurality of customers, and a coupon signal; means for receiving the coupon signal; means for determining whether a coupon, corresponding to the received coupon signal, has been previously processed; and means for conditionally processing the coupon, if the coupon has not been previously processed.

According to yet another aspect of the present invention, there is a coupon system including a communication system, a plurality of customers, and a computer that sends a coupon signal in a first signal in the communication system. The coupon system comprises a receiver that receives the coupon signal sent in the first signal; a determiner that uses a record for previous coupons to determine whether a coupon, corresponding to the coupon signal, has been previously processed; and a transmitter that conditionally transmits the coupon, if the coupon has not been previously processed.

According to yet another aspect of the present invention, there is a method in a system including a communication system, and a plurality of customers. The method comprises the steps, performed for a customer in the plurality of customers, of sending a first signal in the communication system, the first signal including a coupon signal; receiving the coupon signal; after the receiving step, using a record for previous coupons to determine whether a coupon, corresponding to the coupon signal, has been previously processed; and conditionally processing the coupon, if the coupon has not been previously processed.

FIGS. 1A and 1B are a schematic diagram of a system of computer networks, in accordance with a first preferred embodiment of the present invention.

FIG. 2 is a diagram emphasizing a part of the system shown in FIGS. 1A and 1B.

FIGS. 3A, 3B, and 3C are diagrams showing a discount coupon sent through a system of computer networks from computer 230 to Home 160.

FIG. 4 is a diagram of a personal computer inside Home 160.

FIG. 5 is the display of the personal computer showing an electronic coupon received through the system of computer networks into home 160.

FIG. 6 is a side view of the card-writing device in the personal computer for writing coupons onto portable cards in home 160.

FIGS. 7A and 7B are a schematic diagram of a retail store in the preferred system.

FIGS. 8A, 8B, and 8C are enlarged views of some products shown in FIGS. 7A and 7B.

FIG. 9 is a flow chart of a processing performed in the preferred system.

FIG. 10A is a plan view of one of the customer cards in the preferred system.

3

6,012,038

FIG. 10B is a side view of the card shown in FIG. 10A.
FIG. 10C is an enlarged, partial view of the card shown in FIG. 10A.

FIG. 11 is a block diagram of the customer card.
FIG. 12 is a block diagram of the personal computer shown in FIG. 4.

FIG. 13 is a block diagram of the check-out station shown in FIG. 7B.

FIG. 14 is a flow chart of a step of the processing shown in FIG. 9.

FIGS. 15A and 15B are diagrams of some memory contents of a customer card at different points in time.
FIG. 16 is a flow chart of another step of the processing shown in FIG. 9.

FIG. 17 is a flow chart of the processings of step 9010 and of step 9035 of FIG. 9.

FIG. 18 is a block diagram of a system including a clearing house and multiple check-out stations.

FIG. 19 is a flow chart of a possible processing in the preferred system.

The accompanying drawings which are incorporated in and which constitute a part of this specification, illustrate embodiments of the invention and, together with the description, explain the principles of the invention, and additional advantages thereof. Throughout the drawings, corresponding parts are labeled with corresponding reference numbers.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. 1A and 1B show a system of computer networks for distributing coupons in accordance with a first preferred embodiment of the present invention. Computer networks 105, 111, 115, 130, 135, 138, 125, 279, 142, 148, 144, 146, 281, and 151 are interconnected. Each computer network includes a plurality of computers. Each of homes 152, 154, 156, 158, 160, 162, 164, 166, 168, 171, 172, 174, 176, 178, 181, 182, 310, and 320 is coupled to one of the computers, networks via a respective telephone signal path 177.

The system includes portable customer cards 215, 225, 235, 245, 255, 275, 285, 190, 315, 325, 335, 345, 355, 365, 367, 369, 375, and 385. Each customer card is a portable customer card, approximately the size of a credit card. Each card contains a random access memory for storing electronic coupons.

A computer 230 within network 115 stores electronic coupons and distributes the stored coupons to the homes. As represented schematically in FIGS. 1A and 1B, a customer carries her respective card from her home to a store. A computer in each home receives a coupon from computer 230, via one or more of the computer networks, and stores the received coupon onto one of the cards. For example, a computer in home 160 receives a coupon signal from computer 230 via networks 115, 130, and 135 and stores the received coupon onto card 190.

FIG. 2 shows a section of the preferred system, emphasizing a path between computer 230 and home 160. Network 115 is a local area network (LAN), network 130 is a wide area network (WAN), network 135 is an LAN, and network 279 is a LAN.

Network 115 includes a plurality of first computers, computers 234, 238, 230, 236, and 232. Each of these first computers has a respective network address uniquely identifying the computer on network 115. The first computers

4

can communicate with each other by sending data packets in a certain format. Each network-115-packet has a field containing the destination address of the packet. Each network-115-packet is in a format conforming to the communication protocol of network 115, meaning, for example, that the packet has a destination address field offset a certain number of bits from the start of the packet, and that the destination address field has a certain number of bits. Computer 230 includes circuitry (hardware and software) for sending a data packet through transmission cable 117. The circuitry includes software for constructing a packet, having the packet format of network 115, containing a discount coupon identifying a product.

Network 130 includes a second plurality of computers, computers 254, 250, 252, 258, 256, 262, 260, and 272. Computer 230 sends this product-identification signal to home 160 via computer 238, as described in more detail below. Each of these second computers has a respective second network address uniquely identifying the computer on network 130. The second computers communicate with each other by sending a packet in the format for network 130.

The data packet from computer 230 includes a destination address field allowing computer 238 to recognize that the data packet is to be received by computer 238. Computer 238 has an address on both LAN 115 and WAN 130, meaning that computer 238 has circuitry for recognizing an address in a network-115-formatted packet sent over network 115, and has circuitry for recognizing an its own address in a network-130-formatted packet sent over network 130. Thus, computer 238 acts to route packets between networks 115 and 130. In other words, computer 238 includes circuitry, responsive to an address on network 115, for receiving a packet in the format of network 115, containing an electronic coupon identifying a certain product, and for sending a second packet in the format of network 130, the second packet containing a signal identifying the certain product. When computer 238 receives a packet addressed to computer 276, computer 238 constructs a packet addressed to computer 272, using the protocol for network 130.

Computer 272 has an address on both WAN 130 and LAN 135 and, therefore, computer 272 acts to route packets between networks 130 and 135. When computer 272 receives the packet, computer 272 constructs a packet addressed to computer 276, using the protocol of network 135.

More specifically, computer 230 constructs an "IP" packet addressed to computer 276, using the Internet Protocol (IP). Computer 230 then imbeds this IP packet within a network-115-formatted packet addressed to computer 238, using the protocol of network 115. When computer 238 receives the packet, computer 238 reads the IP address, determines that the IP packet should be sent over network 130, and imbeds the IP packet within a network-130-formatted packet addressed to computer 272, using the protocol of network 130.

When computer 272 receives the packet, computer 272 reads the IP address, determines that the IP address corresponds to computer 276, and imbeds the IP packet in a packet addressed to computer 276, using the protocol of network 135.

FIG. 3A shows data packet 3002 in the format of network 115, sent by computer 230 through cable 117. Header field 3010 includes a 20 bit destination address field 3011 identifying computer 238 on network 115. Destination address

6,012,038

5

field 3011 is 16-bits removed from the beginning of the data package 3002. Header 3010 contains other fields, including a 20-bit field containing the address of the sender of packet 3002, and a field containing data correction bits. Field 3020 includes an Internet Protocol (IP) address field 3021 identifying computer 276. Field 3030 includes electronic coupon information in ASCII (American Standard Code for Information Interchange) text form.

Computer 238, which resides on both LAN 115 and WAN 130, includes circuitry to translate packet 3002 received from computer 230, into packet 3004 shown in FIG. 3B. Packet 3004 includes header field 3012. Header 3012 includes a 16 bit destination address field 3013 identifying computer 272 on WAN 130. Address field 3013 is 32-bits removed from the start of packet 3004. Header 3012 has other fields, including a field identifying the sender of packet 3004, and a field containing data correction bits.

Computer 238 determines that the packet should be sent to computer 272 on network 130 by reading a routing table. The routing table has an entry for network 135. The entry for network 135 identifies network 130 and computer 272 as the path to be used when computer 238 is sending a packet to a computer on network 135. Thus, computer 238 constructs packet 3004 in response to IP address field 3021 in packet 3002.

As shown in FIG. 2, computer 238 sends a packet to computer 272, via computers 250, 254, 258, and 260.

In other words, each packet is essentially a type of signal having a network address of a certain length and having a certain number of digits. A signal on one network may include a first network address O1 digits removed from the start of the signal. A signal another network may include a second network address is O2 digits removed from the start of the signal, wherein O1 is not equal to O2, and the first network address includes N1 digits and the second network includes N2 digits, wherein N1 is not equal to N2.

Computer 272, which resides on both WAN 130 and LAN 135, includes circuitry to translate packet 3004 received from computer 238, into packet 3006 shown in FIG. 3C. Packet 3006 includes header field 3014. Header 3014 includes an address field 3015 identifying computer 276 on LAN 135. Header 3014 includes a 16 bit destination address field 3015 identifying computer 276 on LAN 135. Address field 3015 is 24-bits removed from the start of packet 3006. Header 3014 has other fields, including a field identifying the sender of packet 3006, and a field containing data correction bits.

Thus, the preferred system may be conceptualized as computers sending packets containing electronic coupons. The preferred system may also be conceptualized as programs, running on the computers, that send electronic mail (Email) messages to each other. Each Email message includes one or more of the packets described above. The programs include a coupon server (not shown), running on computer 230, for constructing the Email message and sending the Email message to a customer, and Mail Transfer Agents and a User Agent (not shown) that route the Email messages between each other and ultimately store an Email message into an electronic mail box for the recipient of the message. An electronic mailbox is a memory area readable by the owner of the mail box. For example, FIG. 2 shows mail box 277 readable by personal computer 400 in home 160.

FIG. 4 shows a personal computer 400 within home 160. Computer 400 includes a modem 410, a CRT display 420, a keyboard 425, a mouse 423, and a coupon-writing device

6

415. To receive an electronic coupon, the user establishes a telephone connection between computer 400 and computer 276 through modem 410. Subsequently, the user logs onto computer 276 and invokes a program to read Email stored in mailbox 277.

FIG. 5 shows CRT display 420 after the mail-reading program reads a coupon message from mailbox 277. As shown in FIG. 5, coupon data 3030 includes the ASCII text of an electronic mail (Email) message. Message field 5010 identifies the sender and receiver of the message, "couponhouse@usretail.com" being the Email address of the coupon server on node 230 and "bsmith@aol.com" being the Email address of the customer residing in home 160. Message field 5015 is user readable text identifying the coupon. Message field 5020 is electronic coupon information encoded in text format. The user sends coupon data 3030 to device 415 by issuing a print command and specifying device "SCW:", which is a name designating card-writing device 415. A driver program for device 415 receives the text data and translates the data into a certain binary format, described below, and sends the binary data to device 415. Device 415 couples to a customer card 190 and sends data to card 190.

FIG. 6 shows a side view of card-writing device 415, including interface slot 4170. Interface slot 4170 has a width sufficient to accommodate the width of one of the customer cards 190. When a card 190 is in interface slot 4170, conductive contact 4177 inside interface slot 4170 touches contact 2427 (described below) on the customer card. Interface slot 4170 has other contacts (not shown) for touching the other card contacts 2420 (described below).

FIGS. 7A and 7B show grocery store 1000. FIGS. 7A and FIG. 7B are each a partial view of store 1000. Customers 210, 220, 231, 240, 250, 270, 280, and 290, shop in the store. Before shopping in the store, each of these customers obtained a customer card. For example, customer 231 obtained customer card 235 from a bank, by completing an application for the bank. The application contained questions to collect demographic data, including birth date, income level, past buying patterns, geographic location, size of family, level of education, and job-related data. The bank subsequently wrote customer identification data for customer 231 onto customer card 235, and issued customer card 235 to customer 231, and sent the customer's demographic data to a clearinghouse which then stored the demographic data on disk. Each of customers 210, 220, 240, 250, 270, 280, and 290 obtains a respective customer card in a similar manner. In other words, for each customer the preferred method writes demographic data for the customer onto a disk in the market research center, and writes personal identification data for the customer onto a respective card for the customer.

After redemption data, including customer identification data from a plurality of cards, is compiled and sent to a market research center, as described below, the customer identification data is used to access the corresponding demographic data, thereby providing the manufacturer with valuable marketing data on coupon program effectiveness and customer demographics.

Store 1000 includes shelves 10, 20, and 30, defining aisles between the shelves. The supermarket has a plurality of product areas, each corresponding to a respective product. Product Area 110 has Acme brand ammonia. Product Area 120 has Old World brand pasta. Product Area 271 has Lighthouse brand light bulbs.

More specifically, Product Area 110 has bottles of ammonia 112 grouped together on multiple shelves. Bottles of

6,012,038

7

ammonia 112 are contiguously grouped, meaning that no other product is between any two bottles of ammonia 112.

FIG. 8A shows an enlarged view of some of the bottles of ammonia 112. Each bottle of ammonia has a common Universal Product Code (UPC) label 114, which is a group of parallel lines that encodes a number that uniquely identifies acme ammonia. In other words, label 114 is different than labels of units of other products. Each bottle of ammonia 112 also has a common character label 113. Character label 113 is "ACME AMMONIA." Label 113 is different than labels of units of other products.

Product Area 120 has boxes of pasta 122 grouped together on multiple shelves. Boxes of pasta 122 are contiguously grouped, meaning that no other product is between any two boxes of pasta 122.

FIG. 8B shows an enlarged view of some of the boxes of pasta 122. Each box of pasta 122 has a common Universal Product Code (UPC) label 124, which is a group of parallel lines that encodes a number that uniquely identifies Old World pasta. In other words, label 124 is different than labels of units of other products. Each box of pasta 122 also has a common character label 123. Character label 123 is "OLD WORLD PASTA." Label 123 is different than labels of units of other products.

Product Area 271 has boxes of light bulbs 132 grouped together on multiple shelves. Boxes of light bulbs 132 are contiguously grouped, meaning that no other product is between two boxes of light bulbs 132.

FIG. 8C shows an enlarged view of some of the boxes of light bulbs 132. Each box of light bulbs 132 has a common Universal Product Code (UPC) label 134, which is a group of parallel lines that encodes a number that uniquely identifies Lighthouse light bulbs. In other words, label 134 is different than labels of other products. Each box 132 also has a common character label 133. Character label 133 is "LIGHTHOUSE LIGHT BULBS." Label 133 is different than labels of other products.

Similarly, other product area in the store each have a set of respective products contiguously grouped together and a corresponding product station adjacent to the products. The respective units of a certain product have a common label, different than labels on units of other products, that uniquely identifies the certain product. Product area 140 has bottles of ketchup 142 contiguously grouped together. Product area 284 has loaves of bread 162 contiguously grouped together. Product area 170 has cartons of milk 172 contiguously grouped together. Product area 180 has packages of bacon 182. Product area of 191 has packages of butter 192 contiguously grouped together.

Product area 150 has boxes of cereal 152 contiguously grouped together.

FIG. 9 shows a processing performed in the preferred system. Computer 230 sends an electronic coupon, in the form of an E-mail message, through computer networks 115, 130, and 135. (Step 9003). A customer, such as customer 290, receives the electronic coupon, through modem 410, onto her home computer (step 9005). The coupon is compared to a list of previously processed coupons and written onto her customer card 190 using writing device 415 (step 9010). The customer then brings her respective customer card to a store 1000. (step 9020).

At store 1000, the customer removes products from shelves 10, 20, and 30 and brings the products to checkout station 900 (step 9025). In other words, while shopping in store 1000, each of customers 210, 220, 231, 240, 250, 270, 280, and 290 carries his or her respective customer card.

8

Customer 290 carries card 190, customer 220 carries card 225, customer 231 carries card 235, customer 240 carries card 245, customer 250 carries card 255, customer 270 carries card 275, customer 280 carries card 285, and customer 290 carries card 190. Each customer tows a shopping cart to hold selected products. Customer 210 tows cart 212, customer 220 tows cart 222, customer 231 tow cart 232, customer 240 tows cart 242, customer 250 tows cart 252, customer 270 tows cart 291, customer 280 tows cart 282, and customer 290 tows cart 292. The customer then removes a product from the shelf and places the removed product into her cart. The customer thus shops throughout the store.

Checkout station 900 then scans the products and determines a price for each product depending on whether the customer card contains coupons for the scanned product (step 9035). More specifically, the customer redeems the electronic coupons at the checkout area, by inserting her customer card into checkout station 915. For example, a customer such as customer 240 in FIG. 7B completes the purchase of her selected products 243 by transferring products 243 from her cart 242 to counter 900, and by inserting card 245 into checkout station 915. Subsequently, a checkout clerk (not shown) scans each selected product past UPC bar code reader 910. Bar code reader 910 is an optical detector. In other words, bar code reader 910 detects an electromagnetic signal. A processor coupled to station 915 and reader 910 determines whether the most recently scanned product is on a discount list stored in card 245. If the most recently scanned product is identified in this discount list, a price for the product is determined using the discount data corresponding to the product, and the resulting price is displayed on display 917. Checkout counter 900 scans and processes each product 243 in a similar manner.

Similarly customer 280 in FIG. 7B follows the procedure of FIG. 9 by transferring products 283 from her cart 282 to counter 900, and by inserting card 285 into checkout station 915; and the checkout clerk (not shown) scans each selected product 283 past UPC bar code reader 910. Customer 270 follows the procedure of FIG. 9 by transferring products 273 from her cart 291 to counter 900, and by inserting card 275 into checkout station 915; and the checkout clerk (not shown) scans each selected product 273 past UPC bar code reader 910.

Because of the large number of electronic coupons that may be available to a customer, a customer such as customer 310 may wish to insert their card into display station 710, to review what coupons are currently stored on the card. Station 710 may also present the viewer with additional information about the products identified by the coupons on the card. Station 710 is described in detail in application of KEN R. POWELL for SYSTEM AND METHOD FOR DISPLAYING PRODUCT INFORMATION IN A RETAIL SYSTEM Ser. No. 08/603,483, filed on Feb. 20, 1996, now U.S. Pat. No. 5,890,135 issued Mar. 30, 1999 the contents of which is herein incorporated by reference.

Step 9005 includes a step of reading an electronic mail (Email) message. An Email message from computer 230, for the user of PC 400 in home 160, resides in an electronic mailbox 277, which is a memory area on computer 276. The user of PC 400 dials into computer 276 using a telephone line, submits appropriate user identification including a password, and then invokes a program that reads the Email message from the memory of computer 276 into the memory of PC 400.

The user then executes the driver for device 415, by printing the Email message to device "SCW:". The driver

translates the textual coupon shown in FIG. 5 into a binary format, described below. Thus, the driver program and device 415 are essentially responsive to the coupon data stored in packet 3004, which was constructed by routing computer 238.

To prevent an unscrupulous user from repeatedly writing a single Email coupon onto a customer card, which would be contrary to the intent of the coupon issuer, the driver maintains a list of Email coupons already processed, including the time and date of the Email as shown in field 5010 of FIG. 5. Before writing an electronic coupon to a customer card, the driver compares the corresponding Email message to the list to verify that an identical coupon has not been processed.

Further, to prevent a user from changing the date and time field of a previously-printed Email message and reprinting the modified message to thwart this protection mechanism, each Email message from the coupon server on node 230 contains the encoded date and time in field 5020. Thus, the driver both verifies that an Email message with the date and time has not been previously processed, and verifies that the unencoded date and time in area 5010 matches the encoded date and time in field 5020.

There are two preferred methods for getting the Email address for PC 400 to the coupon server on node 230, to allow the server to send a coupon to PC 400. The first preferred method is to program the coupon server using data collected from sources off of the Internet. The second preferred method is to allow the user of PC 400 to send her Email address, through the computer networks, to node 230.

To implement this second method, it is presently preferred that the Email address for the user of PC 400 be sent by a web browser for the World Wide Web (WWW). With one scheme, a user sends an Email message requesting a coupon for a specific product, by invoking the browser to select Hypertext in a document advertising the product. Selection of the Hypertext invokes a "Form" in the document, causing the browser to prompt the user for her Email address, accept the Email address as keyboard input from the user, and construct an Email message addressed to the server on node 230. The message contains the Email address given by the user and data identifying the product corresponding to the selected hypertext. Upon receiving the message, the coupon server sends an Email message to the user's address.

An alternate scheme is to have the user of PC 400 join a club, by invoking the browser to select Hypertext in a document advertising the club. The club is essentially a mailing list for certain types of coupons. Selection of the hypertext invokes a Form in the document, causing the browser to prompt the user for her Email address, accept the Email address as keyboard input from the user, and construct an Email message addressed to the server on node 230. The message contains the Email address given by the user and data identifying the club corresponding to the selected hypertext. Upon receiving the message, the coupon server adds the Email address to the list for the club identified in the message. Subsequently, some event causes the coupon server to send a coupon to each address in the list. (FIG. 19).

One such event would be receipt, by the coupon server, of an Email message from a coupon issuer. (FIG. 19 step 1) The coupon issuer may be a distributor of the product corresponding to the coupon. The coupon server, in this case, acts as "mail exploder," and essentially echoes the single Email message from the coupon issuer to each member of the list. (FIG. 19 step 2)

FIG. 10A shows a plan view of customer card 190, and FIG. 10B shows a side view of card 190. Card 190 is 8.5 cm

by 5.4 cm, the length and width of a typical financial credit card. Card 190 is slightly thicker than a typical financial credit card. Card 190 includes a magnetic stripe 2410, interface contacts 2420 for communication with the product stations and the checkout station, and embossed area 2430 for displaying the card owner's name. Magnetic stripe 2410 allows a conventional credit card stripe reader to read basic data from the card. Magnetic stripe 2410 is not necessary to the operation of the preferred embodiment of the invention, described in more detail below.

FIG. 10C shows interface contacts 2420 in more detail. Interface contacts 2420 are configured in accordance with ISO 7816-2: 1988(E), Identification cards—Integrated circuit(s) cards with contact—Part 2: Dimensions and locations of the contacts, promulgated by the International Organization for Standardization (ISO), and available from the American National Standards Institute (ANSI), 11 West 42nd Street, New York, N.Y. 10036. According to ISO 7816-2, contact 2421 is assigned to VCC (supply voltage), contact 2422 is assigned to RST (reset signal), contact 2423 is assigned to CLK (clock signal), contact 2424 is reserved for future use, contact 2425 is assigned to GND (ground), contact 2426 is assigned to VPP (program and voltage), contact 2427 is assigned to I/O (data input/output), and contact 2428 is reserved for future use. Card 190 communicates with the product stations and the checkout stations through contact 2427 using a half duplex scheme, meaning that contact 2427 is for communicating data signals either to or from the card.

FIG. 11 is a block diagram of customer card 190, including central processing unit 2450, memory 2460, and battery 2470 for supplying power to interface 2425, processor 2450, and memory 2460. Memory 2460 is a random access, addressable device. Station interface 2425 includes a serial to parallel converter for transferring data signals between contact 2427 and CPU 2450 over parallel bus 2452. Memory 2460 stores a program 2465 executed by processor 2450, customer identification data 2467, and authorization data 2468. Customer identification data 2467 includes a sequence of digits that uniquely identifies the holder of the card. Customer identification data 2467 includes the card holder's social security number. For example, identification data 2467 in customer card 235 uniquely identifies customer 231. Authorization data 2468 also includes date data indicating an expiration date for the card. Authorization data 2468 also contains a field identifying that the card is a customer card.

Memory 2460 also stores electronic coupons in coupon list 2435. When a customer inserts a customer card into device 415, processor 2450 receives an identification code for the product from interface 415 and adds the code to the list 2435.

Each of customer cards 215, 225, 235, 245, 255, 275, 285, 315, 325, 335, 345, 355, 365, 367, 369, 375, and 385 has the same hardware structure as customer card 190.

FIG. 12 shows a block diagram PC 400, including central processing unit 435, memory 440, and AC-DC transformer 450. Memory 440 is a random access, addressable device. Memory 440 stores driver program 445 for sending coupons to card-writing device 415. CPU 435 executes driver 445.

FIG. 13 is a block diagram of checkout counter 900 shown in FIG. 7B. Disk 925 provides long term storage. CPU 950 executes instructions in random access, addressable memory 920. Checkout counter 900 also includes UPC reader 910 for reading bar codes on products, and checkout station 915 for communicating with a customer card. Since station 915 is in store 1000 and card-writing device 415 is

6,012,038

11

in home 160, which is a separate building from store 1000, station 915 is spatially removed from card-writing device 415.

CPU 950 and program 922 act to detect a product scanned by UPC reader 910, determine a reference price for the product, search for the product's identification in the memory of a customer card, and deduct a discount from the reference price if the product is identified in the customer card memory. CPU 950 then displays the price of the product on display 917. In other words, CPU 950 and program 922 act to receive a purchase signal identifying a product, to receive to receive a card signal, and to determine a price for the product depending on whether the product identified by the card signal corresponds to the product identified by the purchase signal.

CPU 950 writes coupon redemption data onto disk 925. Periodically, CPU 950 sends the redemption data to an electronic clearing house through modem 930.

FIG. 14 shows the processing of step 9010 of FIG. 9 in more detail. CPU 435 executes device driver program 445 in memory 440 to perform the processing shown in FIG. 14. When a person prints text to device "SCW:", device driver program 445 receives the text and verifies that identical text has not been processed before, by comparing the text received with a list of previous Email messages received. Program 445 also compares the time and date in field 5010 of the text with the encoded time and date in field 5020 of the text, to verify that the text is an authentic Email message from the coupon server on computer 230. If the Email message is an authentic message that has not been processed before, program 445 then translates the text in field 5020 into binary coupon data. (step 14005).

Subsequently, program 445 sends a reset command to card interface 415, causing interface 415 to reset the card by applying a clock signal to card contact 2423. (The card then answers the reset by sending an answer-to-reset data block, including identification data 2467 and authorization data 2468, through card contact 2427. Authorization data 2468 contains a card-type code indicating a customer card.) Program 445 then receives the answer-to-reset data block from card interface 415 (step 14010).

The communication protocol between interface 415 and a customer card is described in more detail in ISO/IEC 7816-3: 1989 (E), Identification cards—Integrated circuit(s) cards with contacts—Part 3: Electronic signals and transmission protocols; and ISO/IEC 7816-3: 1989/Amd.1: 1992 (E), Part 3: Electronic signals and transmission protocols, AMENDMENT 1: Protocol type technique=1, synchronous half duplex block transmission protocol. Both of these standards are promulgated by the International Organization for Standardization (ISO) and distributed by the American National Standards Institute (ANSI).

CPU 435 analyzes the authorization data in the received answer-to-reset block to determine whether the card is a customer card that is eligible to receive electronic coupons from interface 415 (step 14020). CPU 435 determines that the card is a customer card if the received authorization data contains a card-type code indicating a customer card. If the card is a customer card, meaning that the authorization data is authorization data 2468, CPU 435 determines if the card is eligible to receive electronic coupons if authorization data 2468 contains certain codes, and the date and time in Email field 5010 is not later than the date data in authorization data 2468. If the card is an eligible customer card, CPU 435 sends to the customer card a block containing a station-type code, indicating a PC interface, and the binary coupon data (step

12

14040). The binary coupon data includes an identification code for the product received from PC 400 (Old World Pasta 122) and the discount currently being offered for that product. If the card is not an eligible customer card (step 14020), there is no further processing.

FIG. 15A shows some the contents list 2435, starting at location 30 memory 2460, of customer card 190, before CPU 435 of PC 400 executes step 14040. An electronic coupon is represented by three rows in list 2435: a 10 digit UPC product code in the first row, discount format data in the second row ("1" signifying cents, "2" signifying percentage), and discount quantity data in the third row. In FIG. 15A, the customer card is storing two electronic coupons. After CPU 435 executes step 14040 (thereby sending another electronic coupon to the customer card), CPU 2450 in customer card 190 receives the data and adds the data to list 2435, resulting in three electronic coupons in list 2435 as shown in FIG. 15B.

In list 2435 in FIGS. 15A and 15B, the memory field having the product code 7170312350 corresponds to the UPC code on boxes of Lighthouse Light Bulbs 134. The next memory field stores the format of the discount quantity data, with "1" signifying cents and "2" signifying percentage in tenths of a percent. The next memory field stores the discount quality data, 200, signifying that the discount being offered for Lighthouse Light Bulbs 134 is \$2.00. The memory field having the product code 7170312780 corresponds to the UPC code on ammonia bottles 112. The next memory field stores the format of the discount quantity data, with "1" signifying cents and "2" signifying percentage in tenths of a percent. The next memory field stores the discount quality data, 50, signifying that the discount being offered for ammonia bottles 112 is 50 cents. In list 2435 in FIG. 15B, the memory field having the product code 7170312682 corresponds to the UPC code on boxes of Old World Pasta 124. The next memory field stores the format of the discount quantity data, with "1" signifying cents and "2" signifying percentage in tenths of a percent. The next memory field stores the discount quality data, 150, signifying that the discount being offered for Old World Pasta 124 is \$1.50.

FIG. 16 shows aspects of the processing of step 9035 of FIG. 9. The processing of FIG. 16 is processing performed by CPU 950 and program 922 in checkout counter 900, when a customer checks out of store 1000. When a customer, such as customer 290, inserts customer card 190 into interface slot 914, a switch (not shown) in interface slot 914 alerts CPU 950 that a card has been inserted into the slot. When a customer card is in interface slot 914, conductive contacts (not shown) inside interface slot 914 touch each card contact 2420. Subsequently, CPU 950 causes card interface 925 to reset the card by applying a clock signal to card contact 2423. (If the card is a customer card, the card then answers the reset by sending a block of data, including identification data 2467 and authorization data 2468, through card contact 2427.) CPU 950 then receives the answer-to-reset from the card (step 16002). CPU 950 then sends a data block containing a station-type code indicating a checkout station (step 16004). CPU 950 then receives the contents of table 2435 in memory 2460 of the customer card, and temporarily stores these table contents in memory 920 of the checkout station (step 16005). During step 16005, CPU 950 also causes customer card 190 to remove all entries from list 2435, so that the electronic coupons in the list cannot be redeemed again. When the checkout clerk (not shown) moves a product past UPC reader 910, UPC reader 910 detects the UPC code on the product and sends the UPC

6,012,038

13

code to CPU 750 (step 16010). CPU 950 searches the received table contents to determine whether the product scanned is identified in the table (step 16020). If the product is not in the received table, CPU 950 displays the price (step 16040). If the product is in the received table, CPU 950 subtracts the discount, as determined by the discount data stored in the received table, from a product reference price read from disk 925 (step 16030), and displays the resulting price of the product on display 917 (step 16040). If there are products remaining (step 16042), processing proceeds to step 16010. If there are no products remaining, processing proceeds to step 16044 for display of the total price.

Product data, customer identification data 2467, authorization data 2468, and the data in list 2435 are each a type of signal.

In other words, the preferred retail system 1000 includes product areas 110, 120, 271, 140, 284, 170, 180, and 191; a plurality of customer cards each having a memory, and a checkout counter 900 having checkout station 915 acting as a communication device. A method of operating system 1000 comprises the steps of writing a first signal into memory 2460 of a card in the plurality of cards, in response to a person inserting the card into the interface slot of a PC card interface, the first signal identifying a product; reading the first signal from memory 2460, in response to a person inserting the card into the interface slot of the checkout station; receiving another signal, from UPC reader 910, identifying a product; and determining a price for the product depending on whether the product identified by the first signal, read in the reading step, corresponds to the product identified by the other signal.

In summary, after UPC barcode reader 910 scans a product, processor 950 determines eligibility for a discount. If a product qualifies, processor 950 displays the discounted price on display 917.

FIG. 17 shows aspects of the processing of steps 9010 and 9035 of FIG. 9. The processing of FIG. 17 processing is performed by one of the customer cards, such as customer card 190, in the preferred retail system. After the card is reset through contacts 2420, the customer card sends an "answer to reset" data block in accordance with the ISO standard ISO/ICE 7816-3: 1989(E), cited above. The customer card sends identification data 2467 and authorization data 2468 in the answer-to-reset data block (step 17010). If the station then sends a block of data to the customer card, the customer card then receives the block of data through contact 2427 (step 17015). If the block contains a station-type code indicating a PC card interface (step 17020), the customer card then adds product coupon information, from a certain location in the block, to the list 2345 (step 17030).

If the customer card is not eligible, the PC interface will not send a block of data, step 17015 therefore does not execute, and processing ceases until the customer card is reinserted into an interface slot, at which time the station will reset the card and processing will restart at step 17010.

Alternatively, if the block contains a station-type code indicating a Checkout station (step 17070), the customer card then sends list 2345 to the display station (step 17080). In other words, CPU 2450 reads list 2435 from memory 2460, in response to a customer inserting card 190 into checkout station 915, and sends a signal corresponding to the list 2345 to the checkout station (step 17080). If the block does not contain a station-type code indicating a Checkout station, there is no additional processing.

FIG. 18 shows a block diagram of a preferred retail system including a clearinghouse 990, and a plurality of

14

checkout stations 900. Periodically, checkout counter 900 sends redemption data to an electronic clearing house. The redemption data sent to the clearing house includes the identification of the store, identification of the coupons redeemed and of respective quantities of coupon redemptions. Periodically, checkout counter 900 sends redemption data to a market research center. The redemption data sent to the research center includes the identification of the store and of the customers who presented electronic coupons for redemption. The checkout stations send the redemption data blocks, over telephone signal paths 714.

Checkout stations 903 are located within a single company. Checkout stations 903 are similar to checkout stations 900, described above, except that checkout stations 903 have circuitry for communicating over network 912. Checkout stations 903 send transaction data blocks to central financial computer 911 located within the company. Central financial computer 911 periodically sends the compiled transaction data to clearing house 990, over telephone signal paths 714.

Thus, the preferred systems provides a convenient and stimulating shopping environment. The systems allow the user to receive electronic coupons at home and then bring the received coupons to a retail store.

Other applications of electronic coupons are the subject of copending application of KEN R. POWELL for RETAIL SYSTEM, Ser. No. 08/468,816, filed on Jun. 6, 1995, the contents of which is herein incorporated by reference; and of application of KEN R. POWELL for DEVICE AND METHOD OF PROGRAMMING A RETAIL SYSTEM, Ser. No. 08/468,820, filed on Jun. 6, 1995, now U.S. Pat. No. 5,727,153 issued Mar. 10, 1998 for RETAIL STORE HAVING A SYSTEM OF RECEIVING ELECTRONIC COUPON INFORMATION FROM A PORTABLE CARD AND SENDING THE RECEIVED COUPON INFORMATION TO OTHER PORTABLE CARDS, the contents of which is herein incorporated by reference.

Additional advantages and modifications will readily occur to those skilled in the art. The invention in its broader aspects is therefore not limited to the specific details, representative apparatus, and illustrative examples shown and described. Accordingly, departures may be made from such details without departing from the spirit or the scope of Applicants' general inventive concept. The invention is defined in the following claims.

What is claimed is:

1. A system comprising:

a plurality of portable cards;

a first computer network including a first plurality of computers, each having a respective first network address, the plurality of first computers including a first computer having means for sending a first signal including a first network address, an inter-network address corresponding to a computer on another network, and a signal corresponding to a product;

a second computer network including a second plurality of computers, each having a respective second network address;

means, responsive to the inter-network address from the first signal, for sending a second signal including a second network address and the signal corresponding to the product; and

means, responsive to the signal corresponding to the product from the second signal, for sending a card signal, to a portable card in the plurality of cards; and means, spatially removed from the previous means, for reading the card signal from the portable card.

6,012,038

15

2. In a system including a computer network, a plurality of customers, and a computer that sends a coupon signal in a first signal on the computer network, the first signal including a respective destination signal corresponding to a customer in the plurality of customers, a coupon processing system comprising:

- a receiver that receives the coupon signal sent in the first signal;
- a determiner that determines whether a coupon, corresponding to the coupon signal, has been previously processed; and
- a transmitter that conditionally transmits the coupon, if the coupon has not been previously processed.

3. The coupon processing system of claim 2 wherein the respective destination signal includes an inter-network address.

4. The coupon processing system of claim 2 wherein the respective destination signal includes an electronic mail address.

5. The coupon processing system of claim 2 wherein the transmitter includes

- a card interface that transmits the coupon to a card in a plurality of portable cards.

6. The coupon processing system of claim 5 further including

- a processor, spatially removed from the transmitter, that receives a transmitted coupon from the card.

7. The coupon processing system of claim 2 further including

- a second receiver that receives a purchase signal corresponding to a product; and
- a determiner that determines whether a transmitted coupon corresponds to the purchase signal.

8. The coupon processing system of claim 7 further including

- an electromagnetic detector for generating the purchase signal.

9. In a system including a computer network, and a plurality of customers, a method comprising the steps, performed for a customer in the plurality of customers, of:

- sending a first signal on the computer network, the first signal including a respective destination signal corresponding to the customer, and a coupon signal;
- receiving the coupon signal;

after the receiving step, determining whether a coupon, corresponding to the coupon signal, has been previously processed; and

conditionally processing the coupon, if the coupon has not been previously processed.

10. The method of claim 9 wherein the sending step includes sending the first signal wherein the respective destination signal includes an inter-network address.

11. The method of claim 9 wherein the sending step includes sending the first signal wherein the respective destination signal includes an electronic mail address.

12. The method of claim 9 further including the steps of receiving a purchase signal corresponding to a product; and

determining whether a coupon, processed by the processing step, corresponds to the purchase signal.

13. The method of claim 9 further including the steps of generating a purchase signal with an electromagnetic detector, the purchase signal corresponding to a product;

16

receiving the purchase signal; and

determining whether a coupon, processed by the processing step, corresponds to the purchase signal.

14. The method of claim 9 wherein the sending step includes

sending an inter-network address, to cause a routing system to generate a plurality of routing signals, each of the plurality of routing signals corresponding to a respective portion of a signal path between two computers.

15. The method of claim 9 wherein the system further includes a plurality of portable cards and the method further includes

sending the coupon to a card in the plurality of portable cards;

subsequently, moving the card; and

receiving the coupon from the card.

16. The method of claim 15 wherein the system further includes a plurality of portable cards and the processing step includes

sending the coupon to a card in the plurality of portable cards.

17. The method of claim 15 wherein the system further includes a plurality of portable cards and the method further includes the steps, performed after the determining step, of:

sending the coupon to a card in the plurality of portable cards;

subsequently, moving the card; and

receiving the coupon from the card.

18. A coupon system for a system including a computer network, and a plurality of customers, the coupon system comprising:

means for sending a first signal on the computer network, the first signal including a respective destination signal corresponding to a customer in the plurality of customers, and a coupon signal;

means for receiving the coupon signal;

means for determining whether a coupon, corresponding to the received coupon signal, has been previously processed; and

means for conditionally processing the coupon, if the coupon has not been previously processed.

19. The coupon system of claim 18 wherein the respective destination signal includes an inter-network address.

20. The coupon system of claim 18 wherein the respective destination signal includes an electronic mail address.

21. The coupon system of claim 18 wherein the system further includes a plurality of portable cards and the means for conditionally processing includes a card interface.

22. The coupon system of claim 18 further including a receiver that receives a purchase signal corresponding to a product; and

a determiner that determines whether a coupon, processed by the processing means, corresponds to the purchase signal.

23. The coupon system of claim 18 wherein the destination signal includes

sending an inter-network address, to cause a routing system to generate a plurality of routing signals, each of the plurality of routing signals corresponding to a respective portion of a signal path between two computers.

24. In a system including a communication system, a plurality of customers, and a computer that sends a coupon



EXHIBIT/ ATTACHMENT

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signal in a first signal in the communication system, a coupon system comprising:

a receiver that receives the coupon signal sent in the first signal;

a determiner that uses a record for previous coupons to determine whether a coupon, corresponding to the coupon signal, has been previously processed; and

a transmitter that conditionally transmits the coupon, if the coupon has not been previously processed.

25. The coupon system of claim 24 wherein the first signal includes a destination signal corresponding to a customer in the plurality of customers.

26. The coupon system of claim 24 wherein the first signal includes an electronic mail address.

27. The coupon system of claim 24 wherein the transmitter includes

a card interface that transmits the coupon to a card in a plurality of portable cards.

28. The coupon system of claim 27 further including a processor, spatially removed from the transmitter, that receives a transmitted coupon from the card.

29. The coupon system of claim 24 further including

a second receiver that receives a purchase signal corresponding to a product; and

a determiner that determines whether a transmitted coupon corresponds to the purchase signal.

30. The coupon system of claim 29 further including an electromagnetic detector for generating the purchase signal.

31. In a system including a communication system, and a plurality of customers, a method comprising the steps, performed for a customer in the plurality of customers, of:

sending a first signal in the communication system, the first signal including a coupon signal;

receiving the coupon signal;

after the receiving step, using a record for previous coupons to determine whether a coupon, corresponding to the coupon signal, has been previously processed; and

conditionally processing the coupon, if the coupon has not been previously processed.

32. The method of claim 31 wherein the sending step includes sending a destination signal corresponding to a customer in the plurality of customers.

18

33. The method of claim 31 wherein the sending step includes sending an electronic mail address.

34. The method of claim 31 further including the steps of receiving a purchase signal corresponding to a product; and

determining whether a coupon, processed by the processing step, corresponds to the purchase signal.

35. The method of claim 31 further including the steps of generating a purchase signal with an electromagnetic detector, the purchase signal corresponding to a product;

receiving the purchase signal; and

determining whether a coupon, processed by the processing step, corresponds to the purchase signal.

36. The method of claim 31 wherein the sending step includes

sending an inter-network address, to cause a routing system to generate a plurality of routing signals, each of the plurality of routing signals corresponding to a respective portion of a signal path between two computers.

37. The method of claim 31 wherein the system further includes a plurality of portable cards and the method further includes

sending the coupon to a card in the plurality of portable cards;

subsequently, moving the card; and

receiving the coupon from the card.

38. The method of claim 37 wherein the system further includes a plurality of portable cards and the processing step includes

sending the coupon to a card in the plurality of portable cards.

39. The method of claim 37 wherein the system further includes a plurality of portable cards and the method further includes the steps, performed after the determining step, of:

sending the coupon to a card in the plurality of portable cards;

subsequently, moving the card; and

receiving the coupon from the card.

* * * * *

U.S. PATENT AND TRADEMARK OFFICE
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United States Patent [19]
Powell

[11] **Patent Number:** **6,067,526**
[45] **Date of Patent:** ***May 23, 2000**

[54] **SYSTEM AND METHOD FOR
DISTRIBUTING COUPONS THROUGH A
SYSTEM OF COMPUTER NETWORKS**

[75] Inventor: **Ken R. Powell**, Athens, Ga.

[73] Assignee: **Softcard Systems, Inc.**, Watkinsville,
Ga.

[*] Notice: This patent is subject to a terminal disclaimer.

[21] Appl. No.: **09/245,419**

[22] Filed: **Feb. 5, 1999**

Related U.S. Application Data

[63] Continuation of application No. 09/100,868, Jun. 22, 1998, which is a continuation of application No. 08/603,482, Feb. 20, 1996, Pat. No. 5,806,044.

[51] Int. Cl.⁷ **G06F 17/60**

[52] U.S. Cl. **705/14; 370/389; 370/392;
709/238**

[58] Field of Search **370/351, 389,
370/392, 466; 395/200.6, 200.68; 705/14;
709/230, 238**

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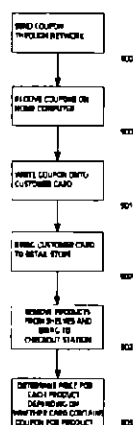
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Primary Examiner—Edward R. Cosimano
Attorney, Agent, or Firm—Jerome D. Jackson

[57] ABSTRACT

A system for dispensing and redeeming the electronic discount coupons. The system includes a personal computer (PC) having hardware and software for receiving an electronic coupon from the system of computer networks, translating the received coupon into a binary format, and sending the binary-formatted coupon to a card-writing device. The card-writing device writes the coupon data onto a portable customer card ("smart card") approximately the size of a credit card. Subsequently, the customer goes to the store with the card. Upon completion of shopping, the customer redeems the electronic coupons at the checkout area, by inserting the card into the checkout station. During checkout, the customer is credited with the value of a coupon when UPC data from a bar code reader corresponds to a coupon stored on the card.

51 Claims, 21 Drawing Sheets



6,067,526

Page 2

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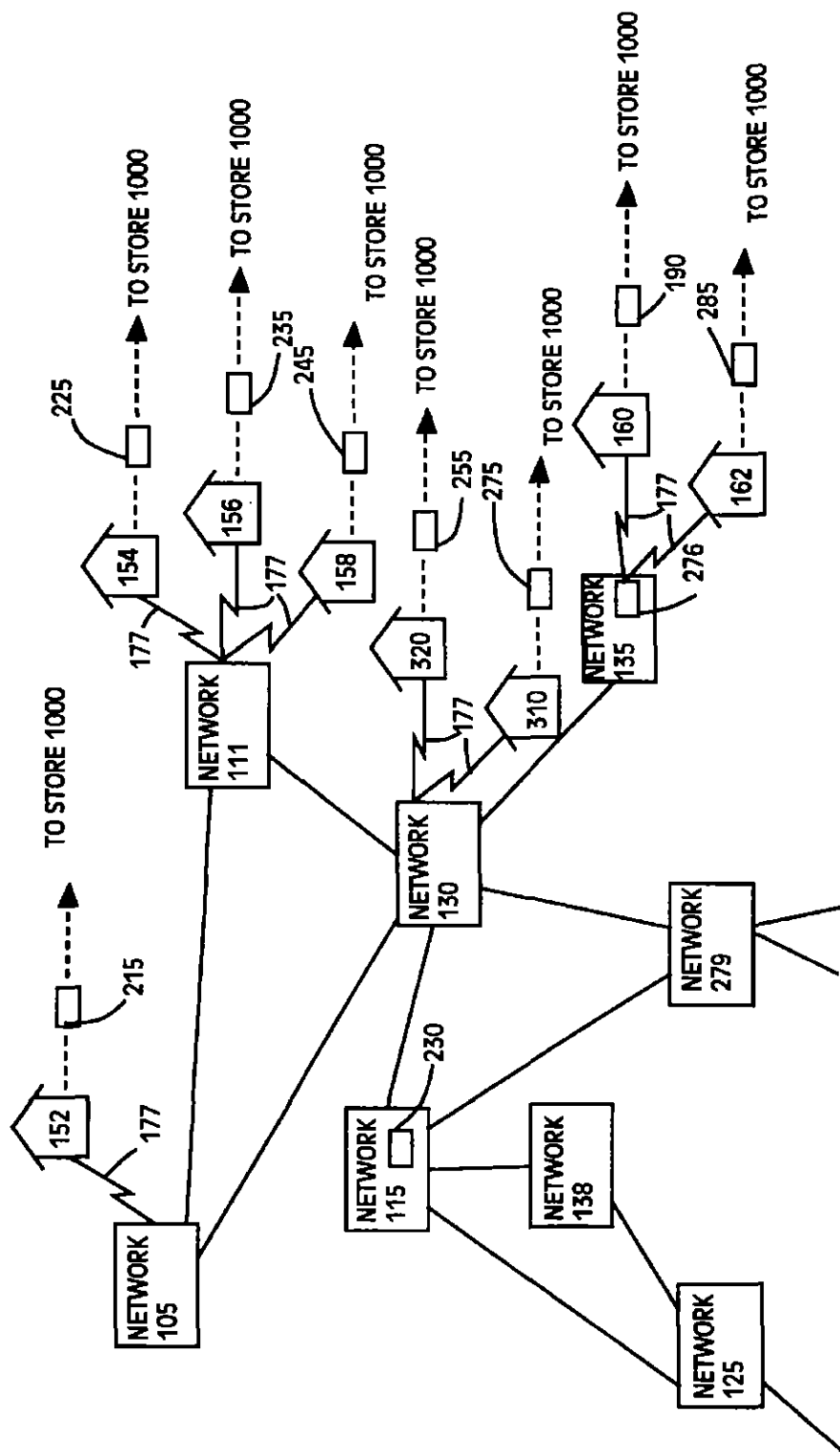
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Fig. 1A



TO Fig. 1B

U.S. Patent

May 23, 2000

Sheet 2 of 21

6,067,526

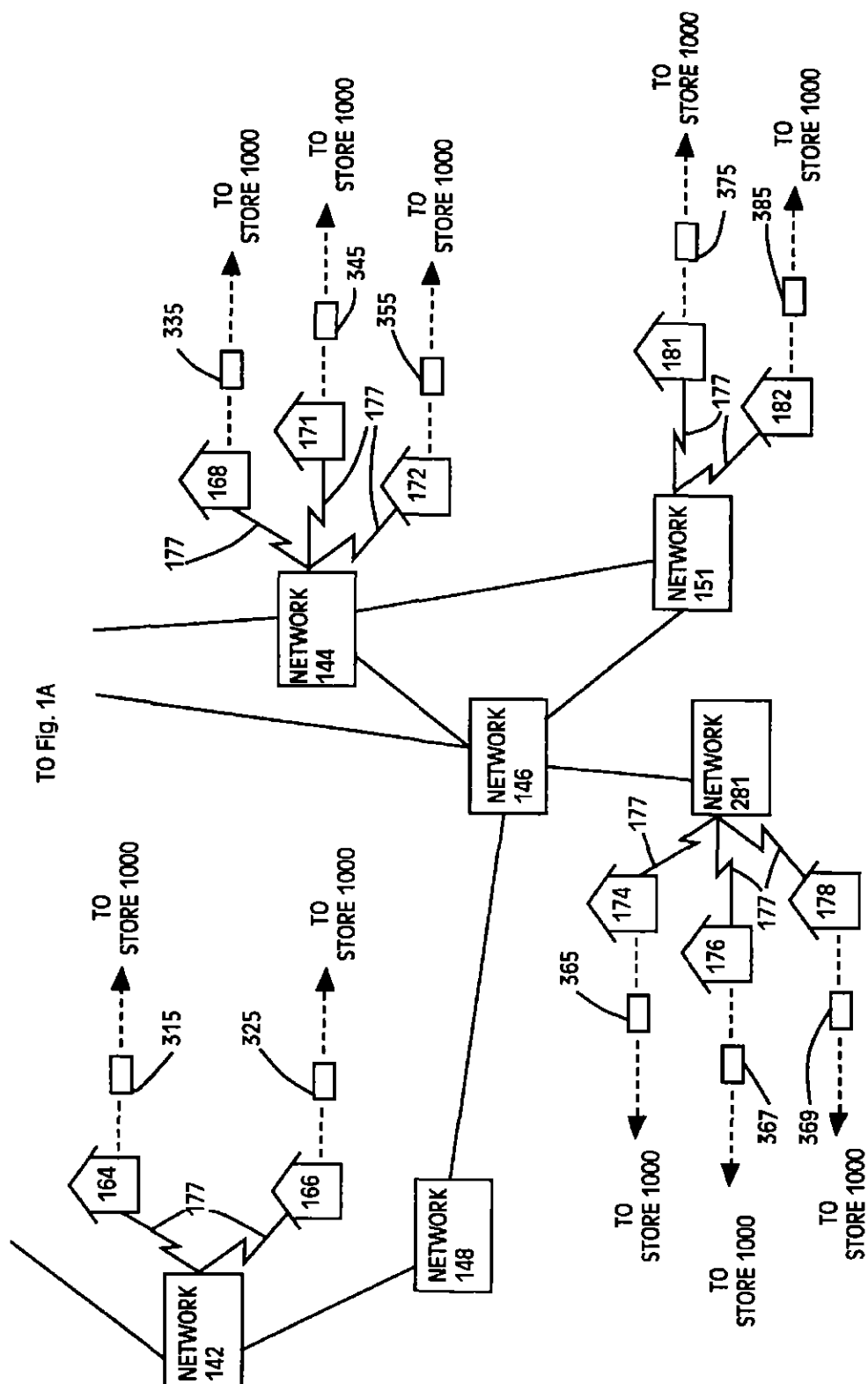


Fig. 1B

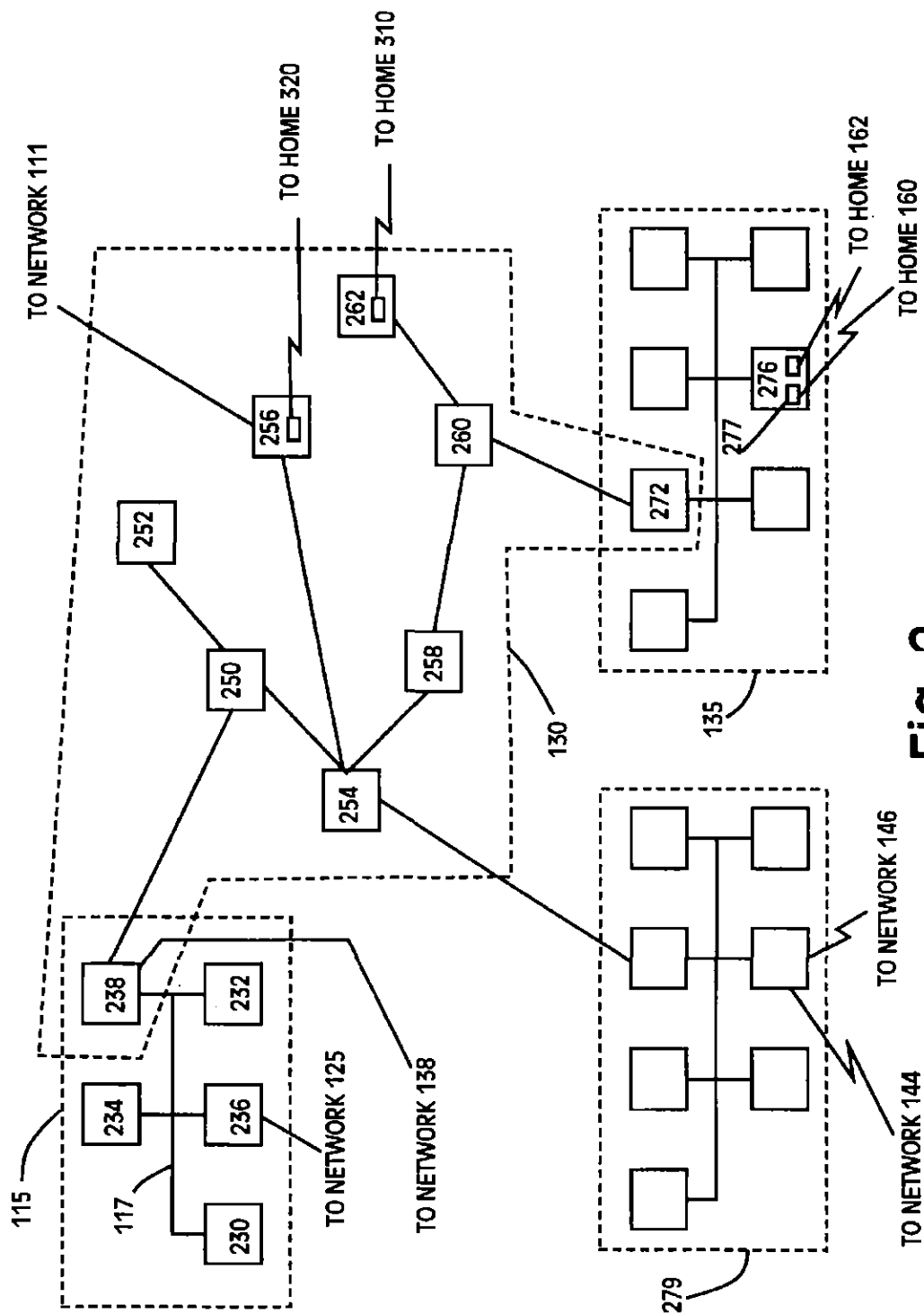


Fig. 2

U.S. Patent

May 23, 2000

Sheet 4 of 21

6,067,526

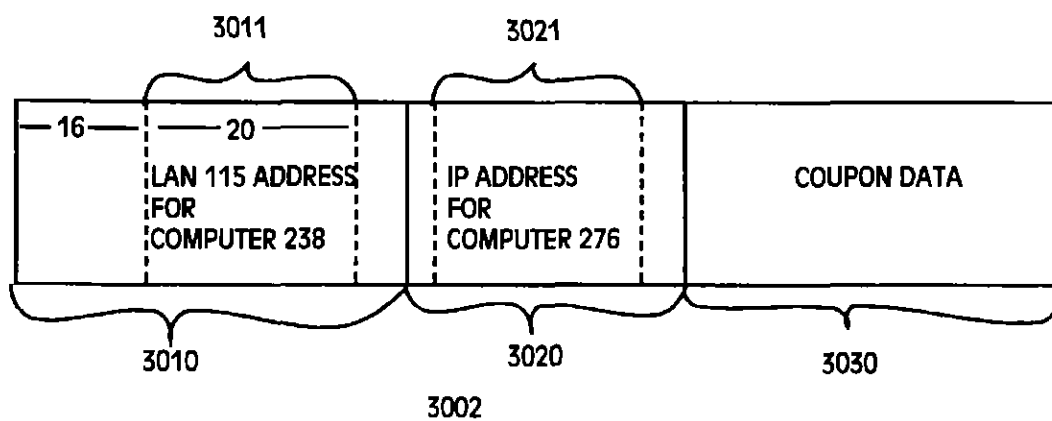


Fig. 3A

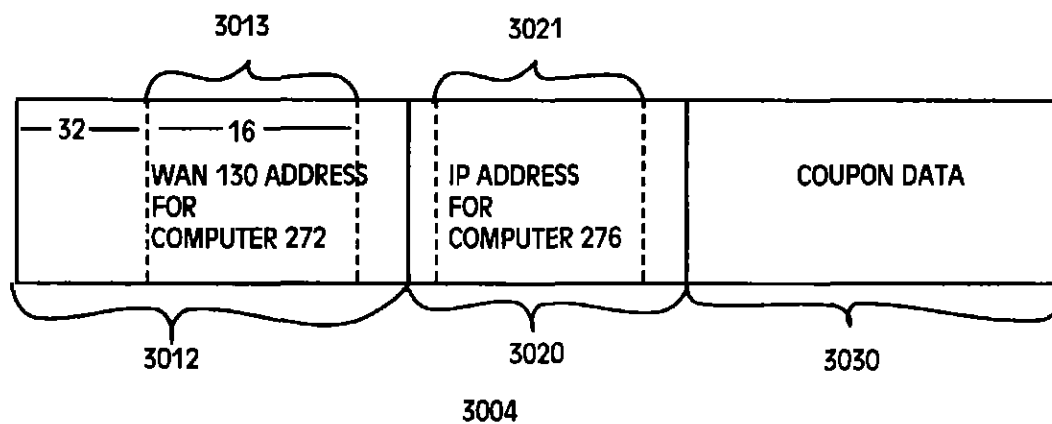


Fig. 3B

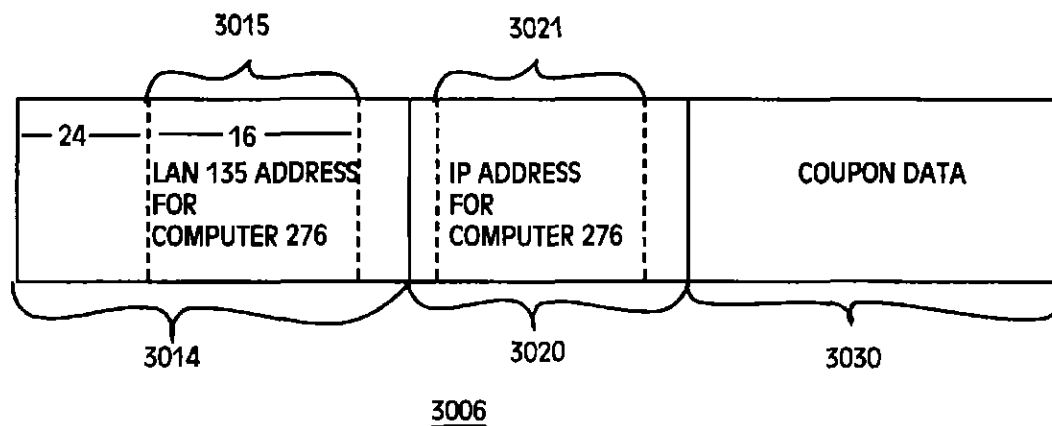


Fig. 3C

U.S. Patent

May 23, 2000

Sheet 5 of 21

6,067,526

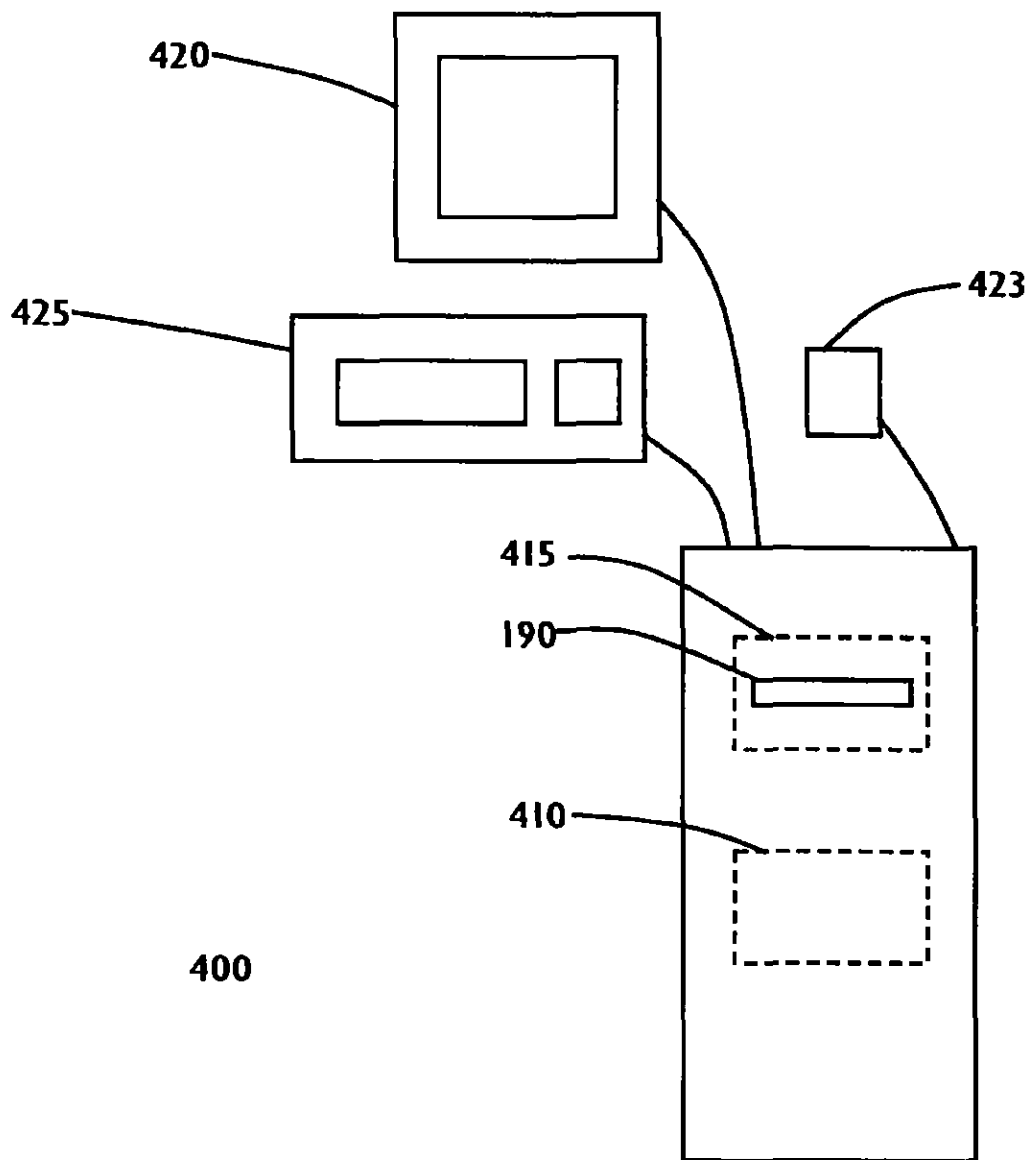
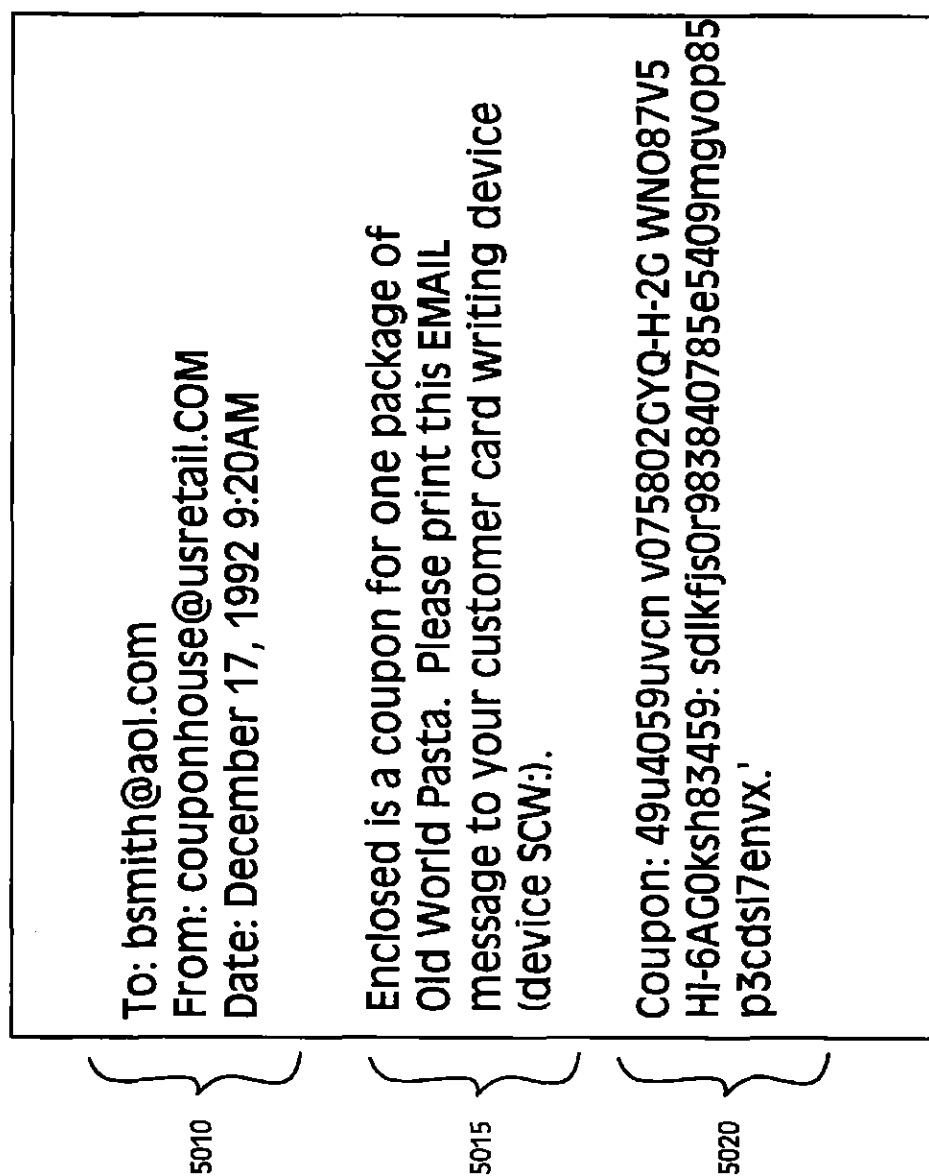


Fig. 4

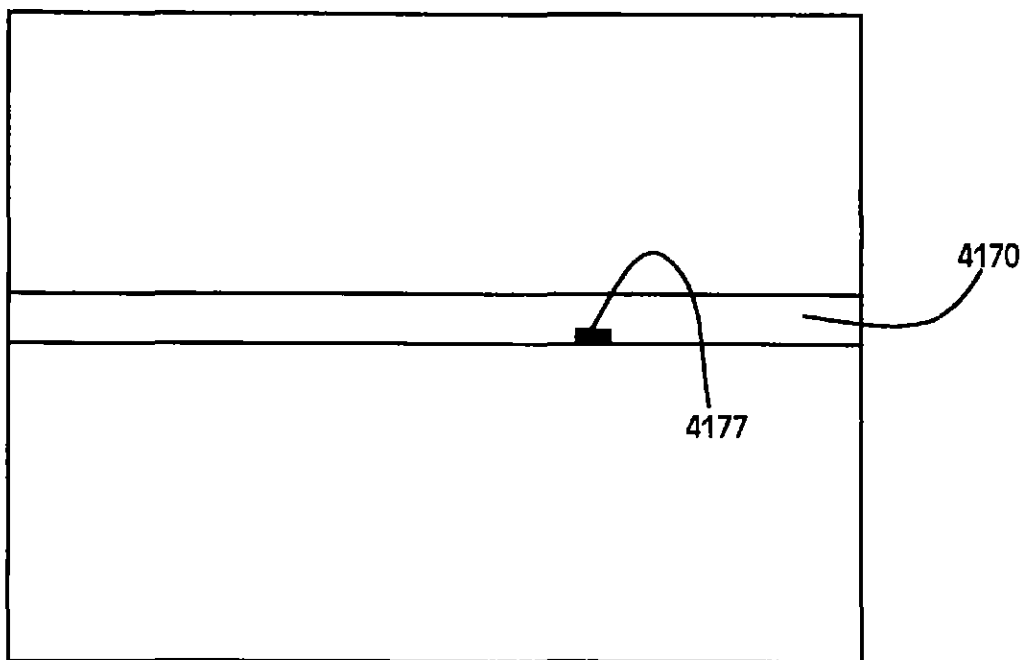
**Fig. 5**

U.S. Patent

May 23, 2000

Sheet 7 of 21

6,067,526



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Fig. 6

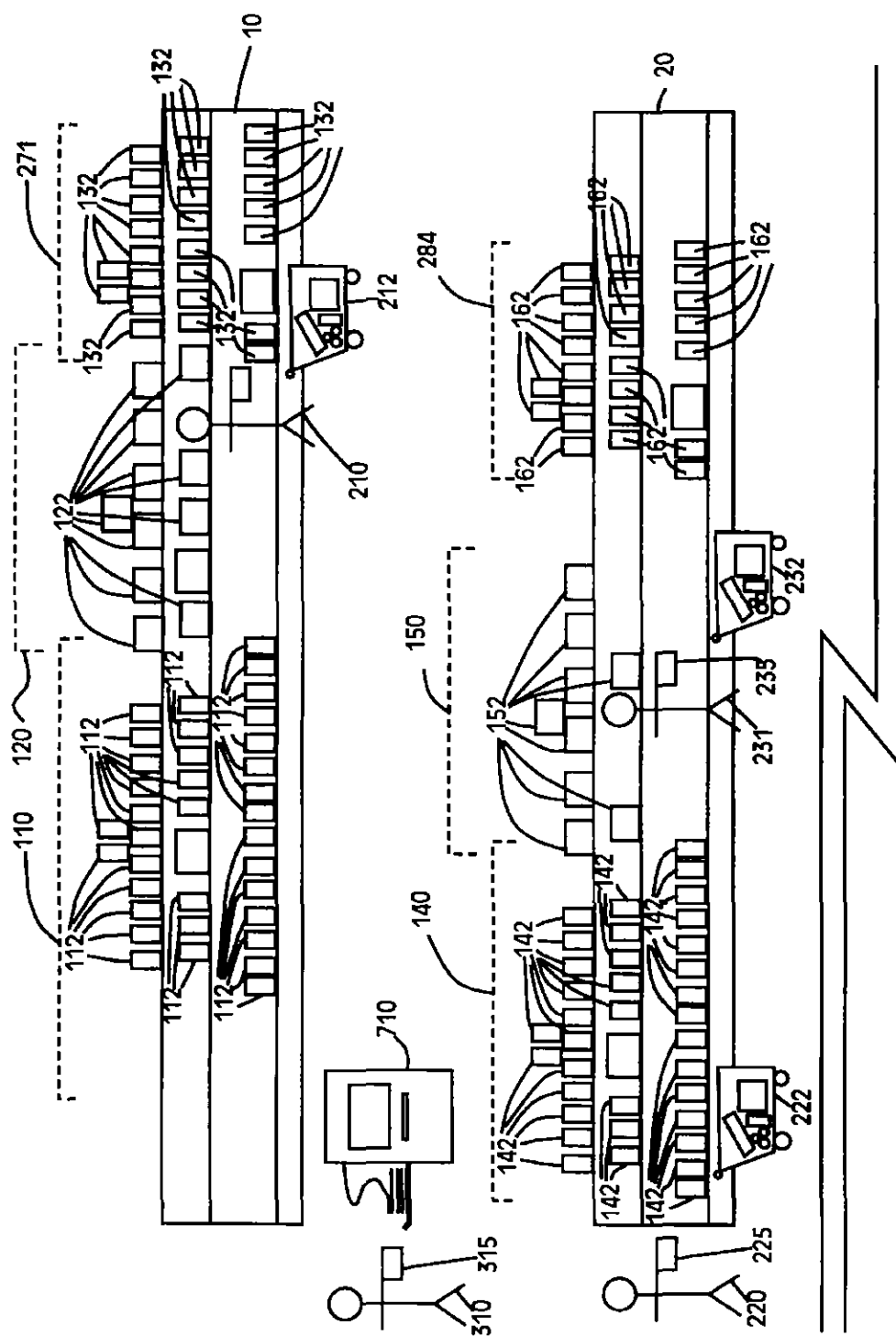


Fig. 7A

U.S. Patent

May 23, 2000

Sheet 9 of 21

6,067,526

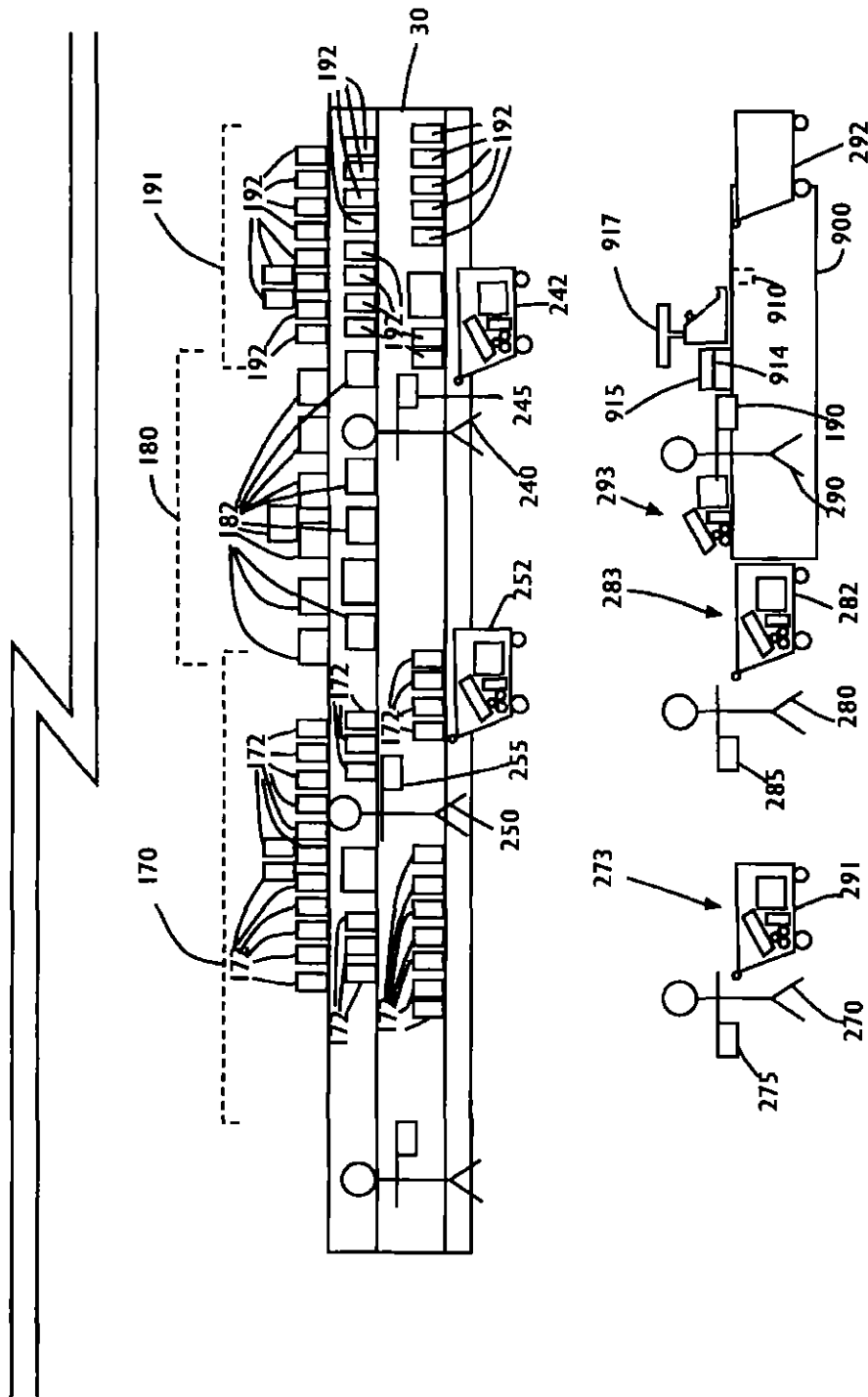


Fig. 7B

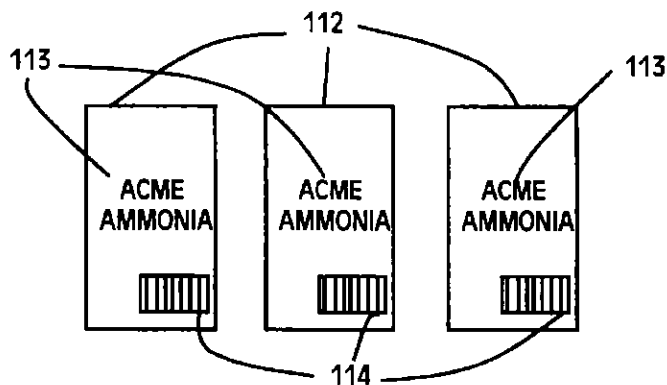


Fig. 8A

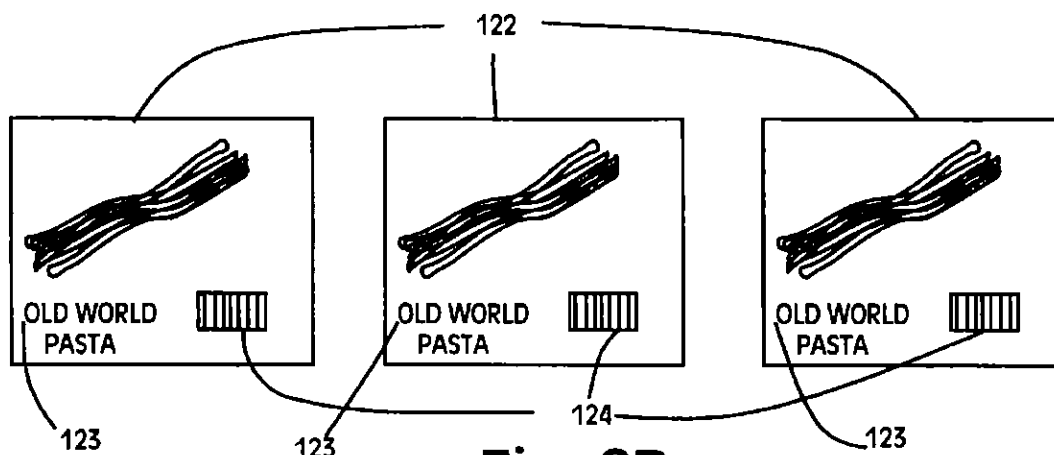


Fig. 8B

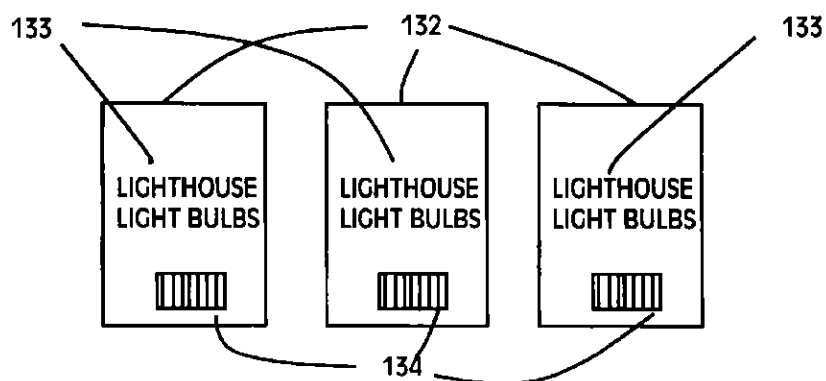


Fig. 8C

U.S. Patent

May 23, 2000

Sheet 11 of 21

6,067,526

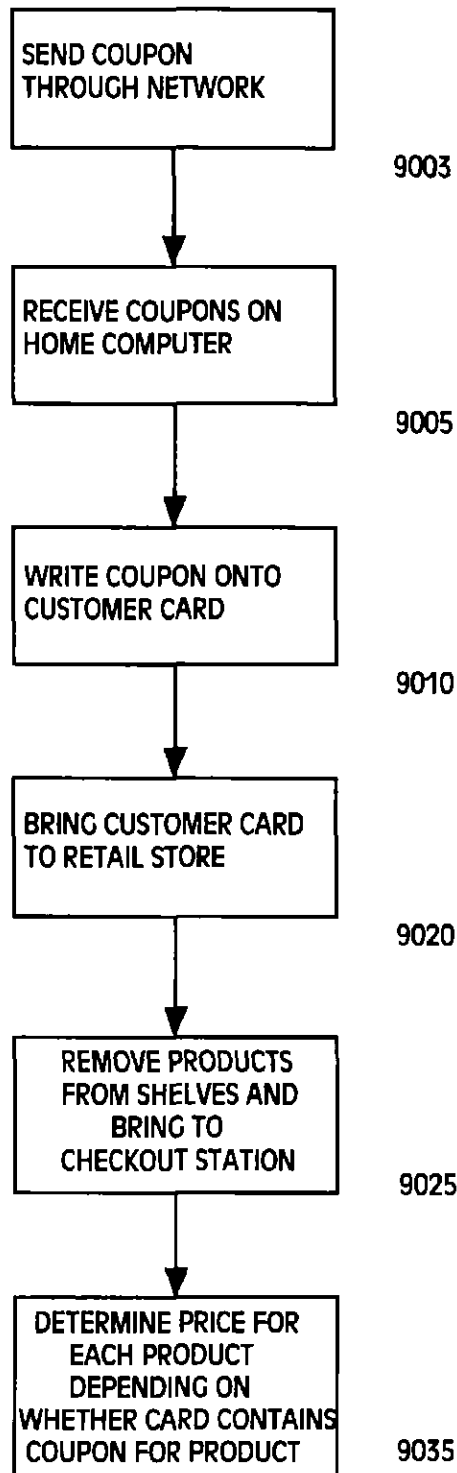


Fig. 9

U.S. Patent

May 23, 2000

Sheet 12 of 21

6,067,526

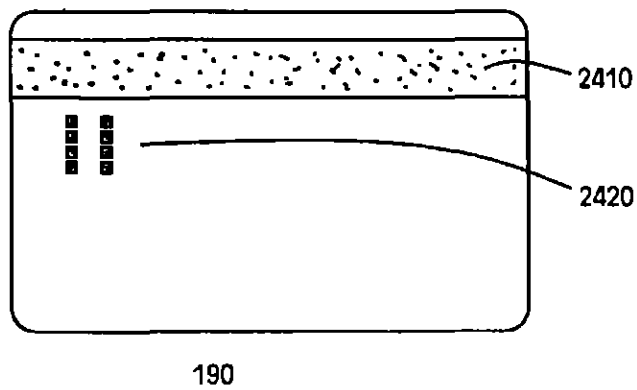


Fig. 10A

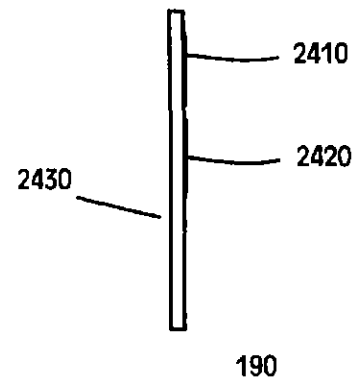


Fig. 10B

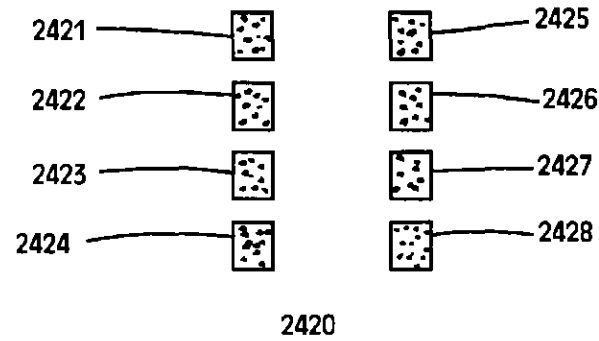


Fig. 10C

U.S. Patent

May 23, 2000

Sheet 13 of 21

6,067,526

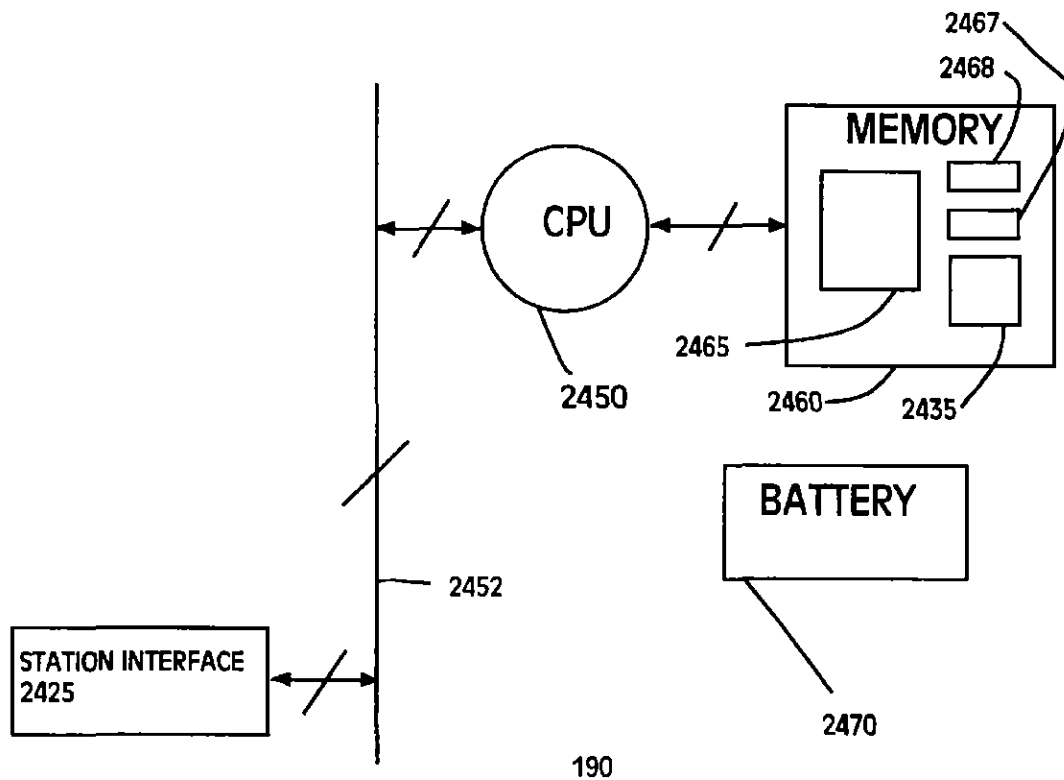


Fig. 11

U.S. Patent

May 23, 2000

Sheet 14 of 21

6,067,526

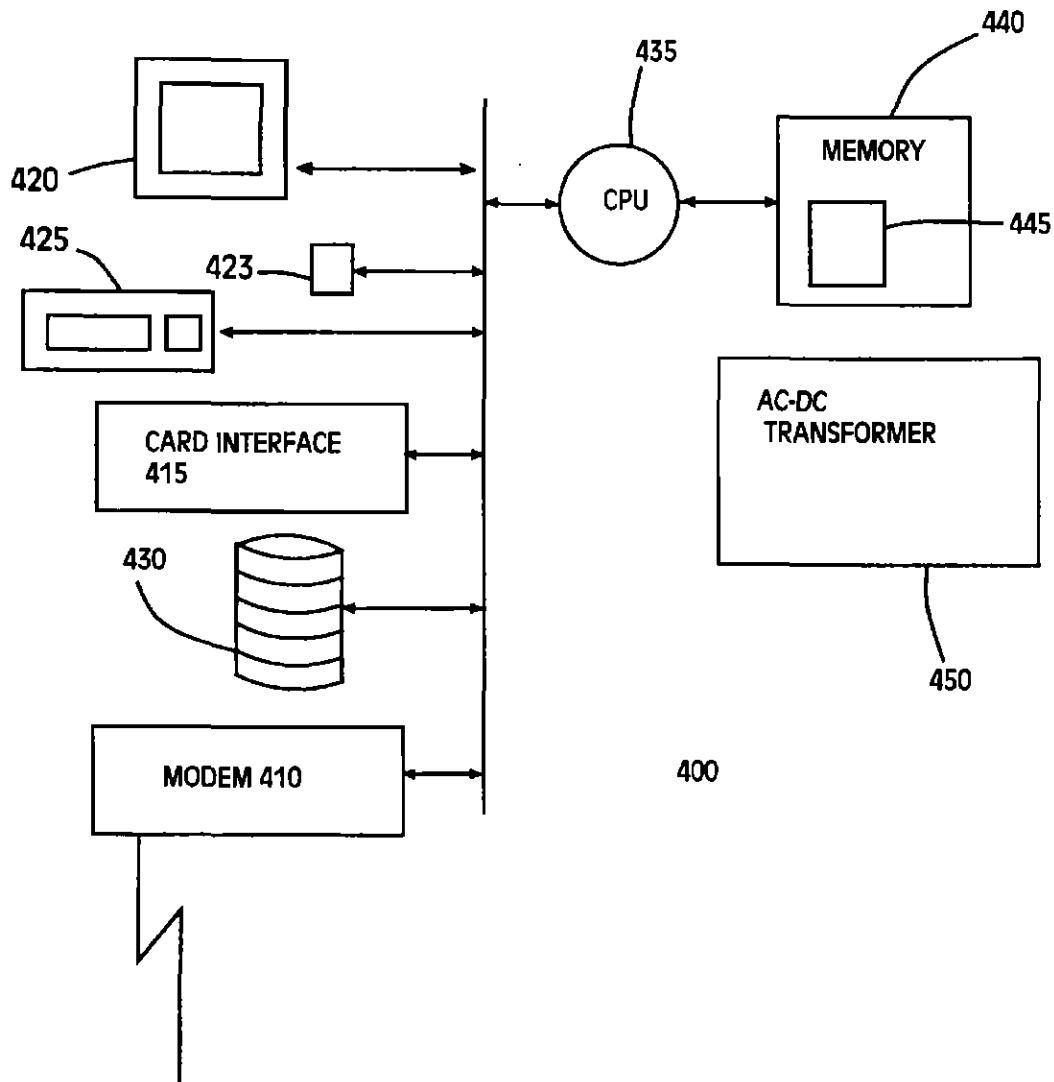


Fig. 12

U.S. Patent

May 23, 2000

Sheet 15 of 21

6,067,526

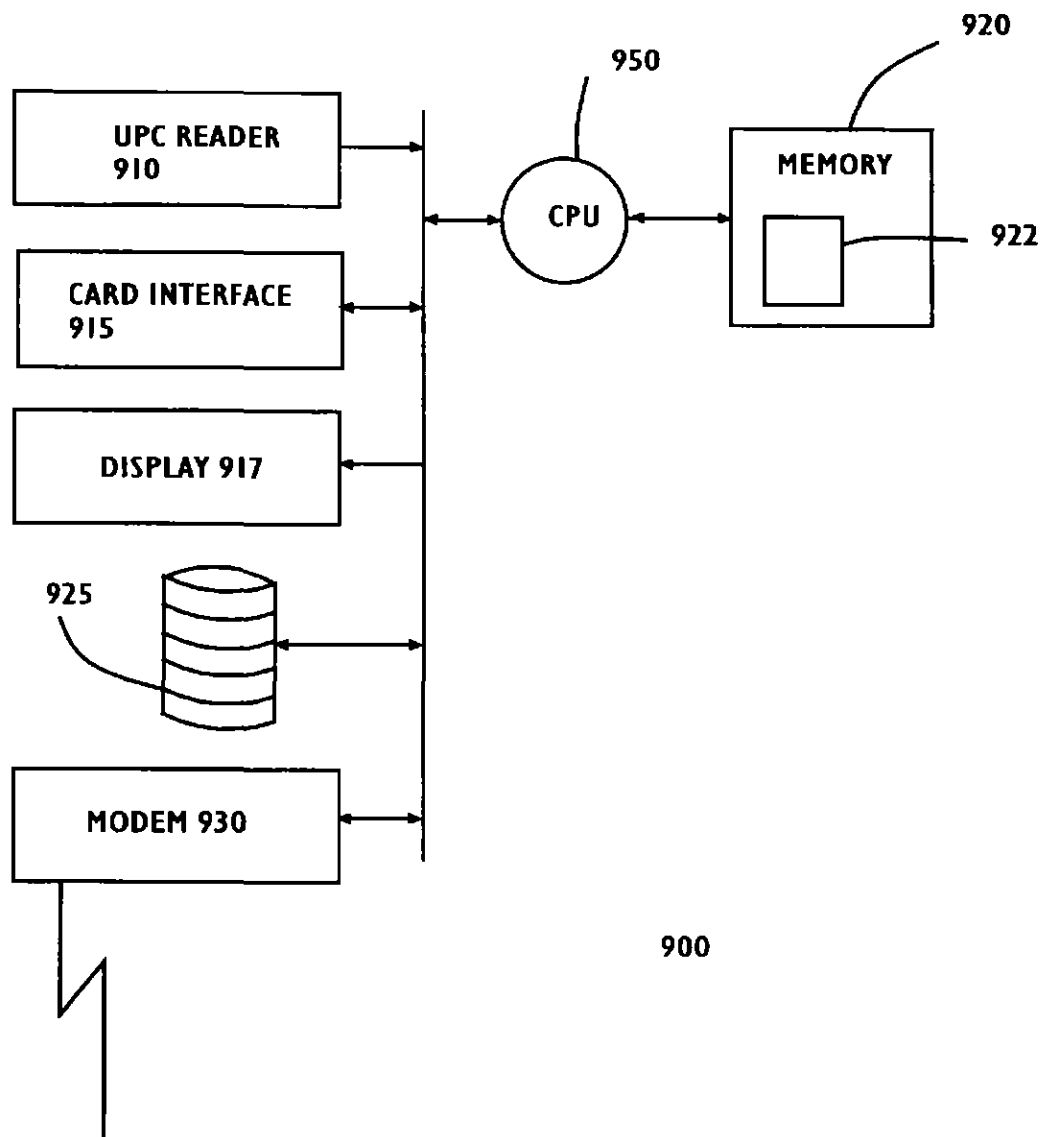


Fig. 13

U.S. Patent

May 23, 2000

Sheet 16 of 21

6,067,526

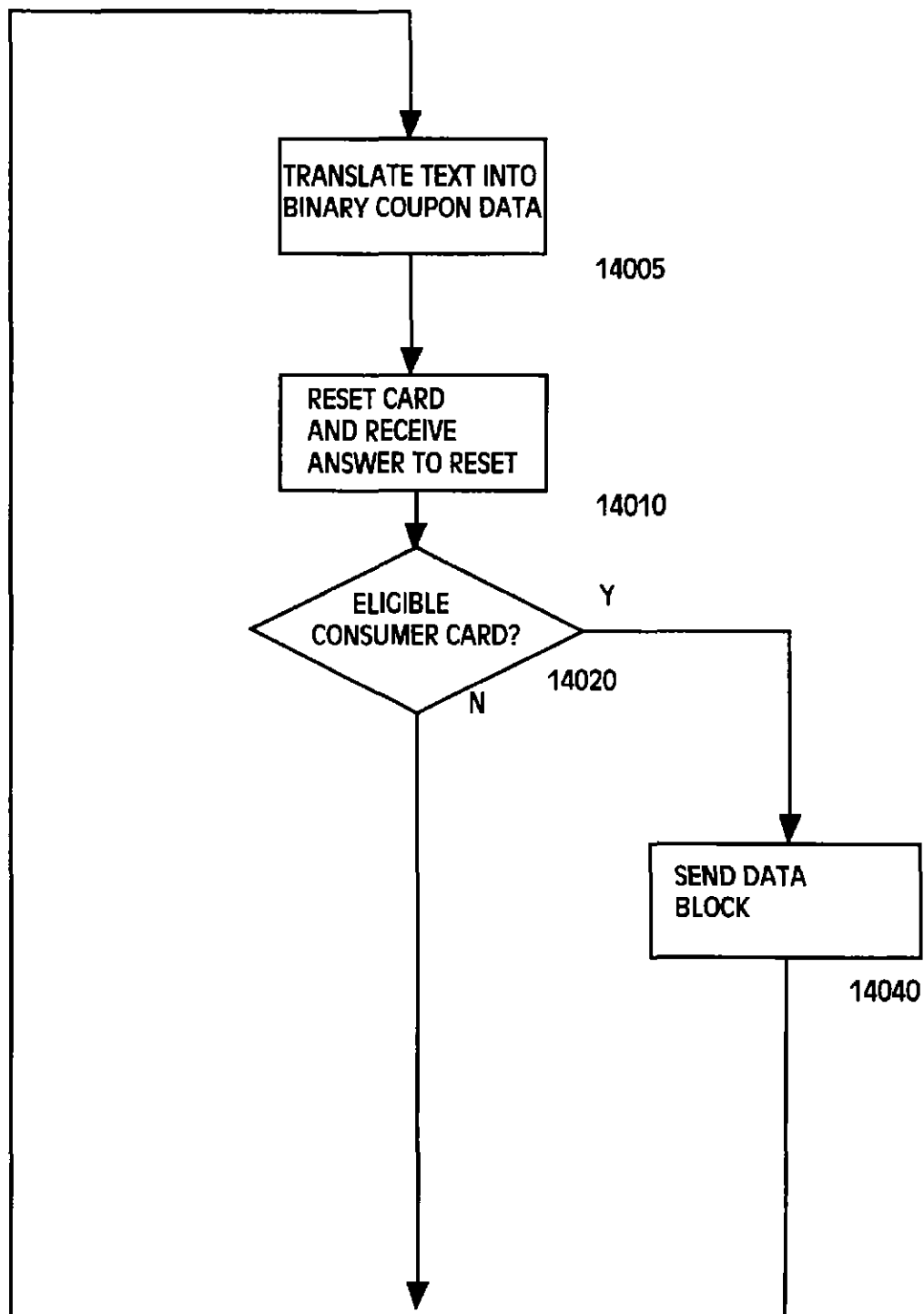


FIG. 14

U.S. Patent

May 23, 2000

Sheet 17 of 21

6,067,526

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Fig. 15A

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Fig. 15B

U.S. Patent

May 23, 2000

Sheet 18 of 21

6,067,526

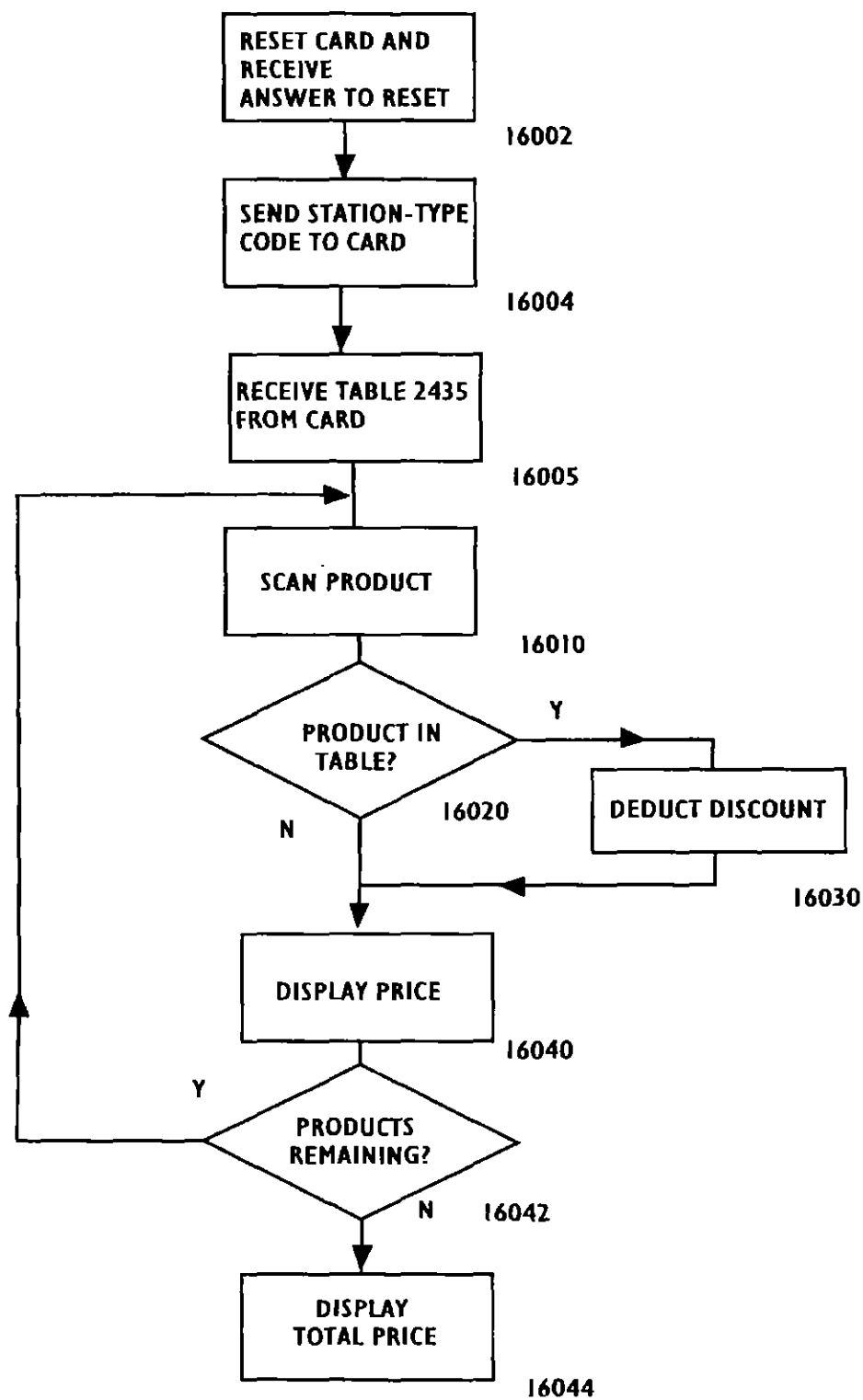


FIG. 16

U.S. Patent

May 23, 2000

Sheet 19 of 21

6,067,526

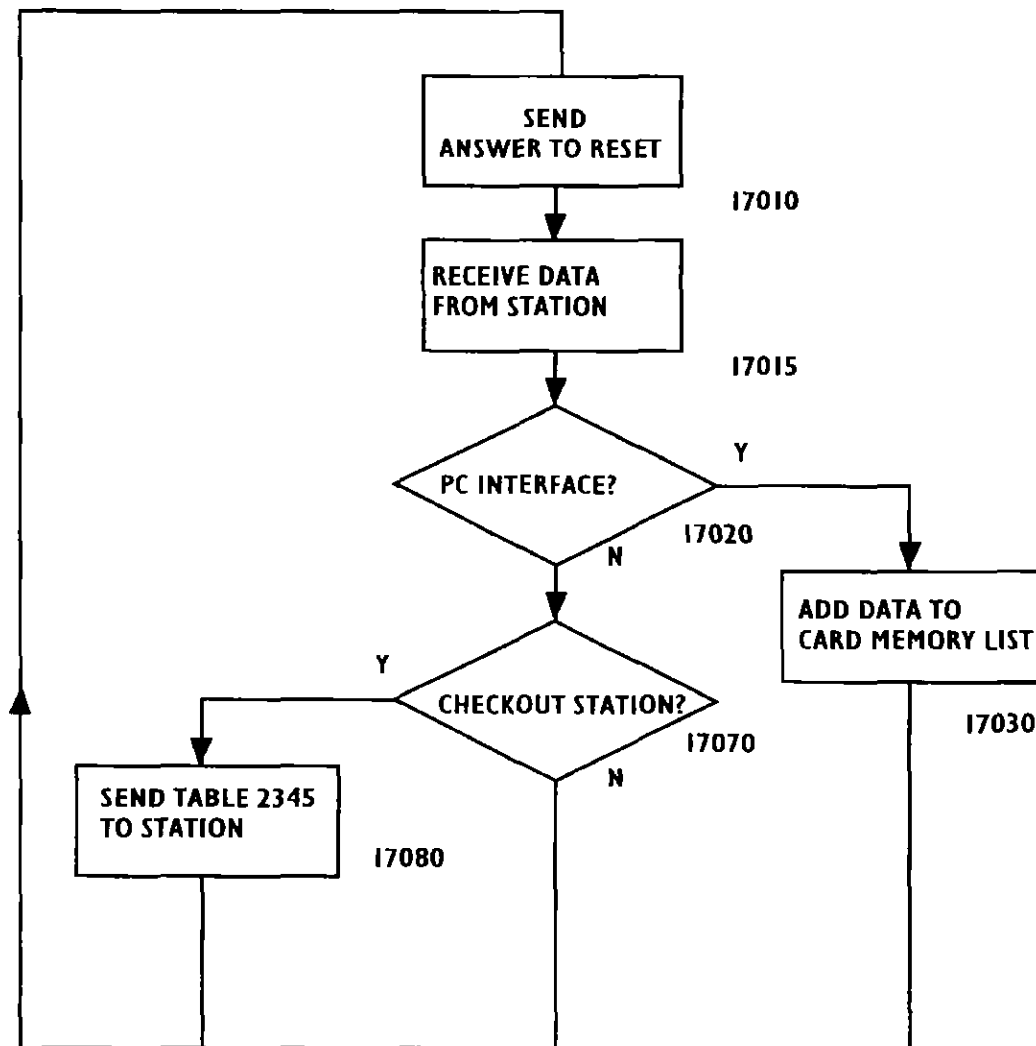


FIG. 17

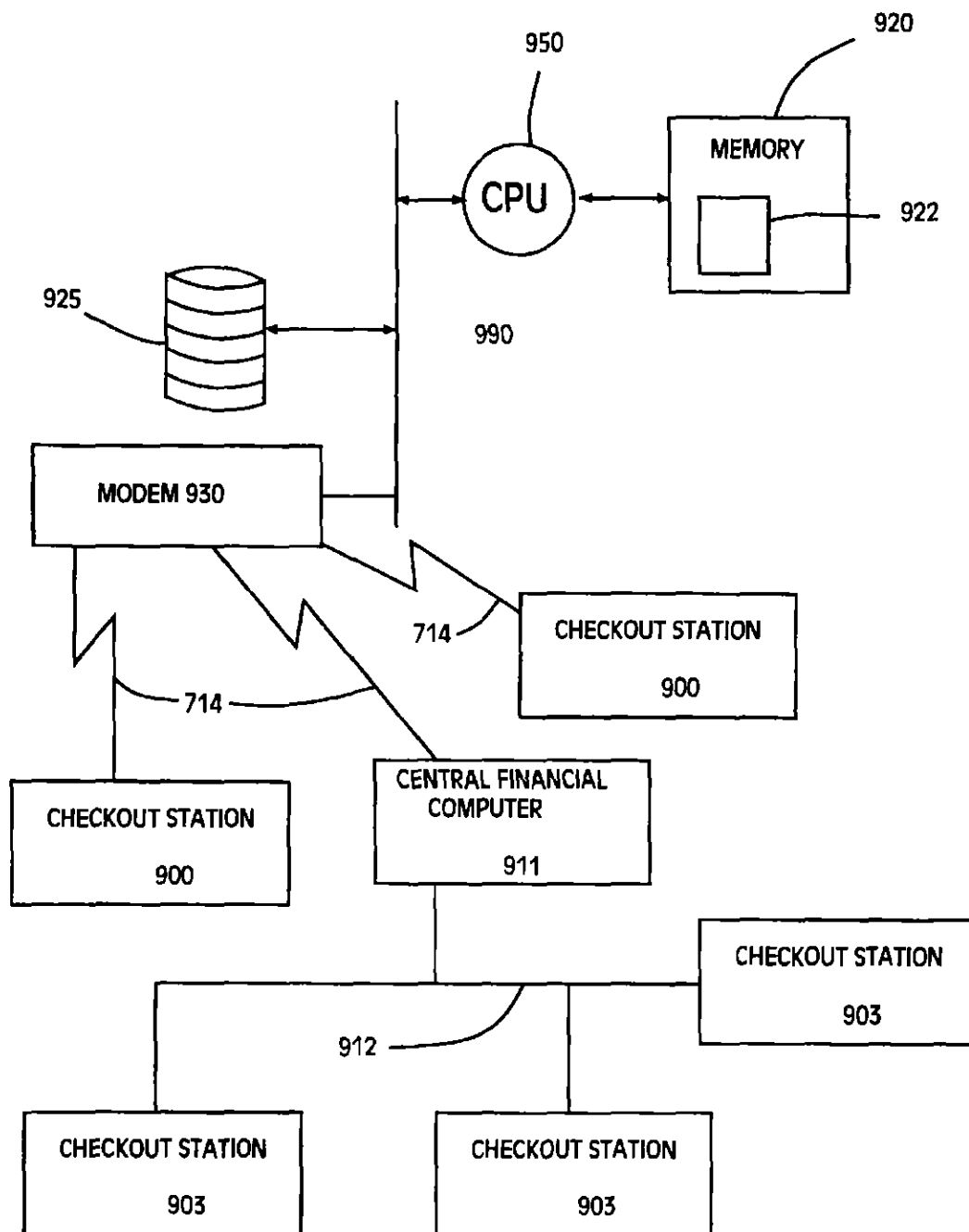


Fig. 18

U.S. Patent

May 23, 2000

Sheet 21 of 21

6,067,526

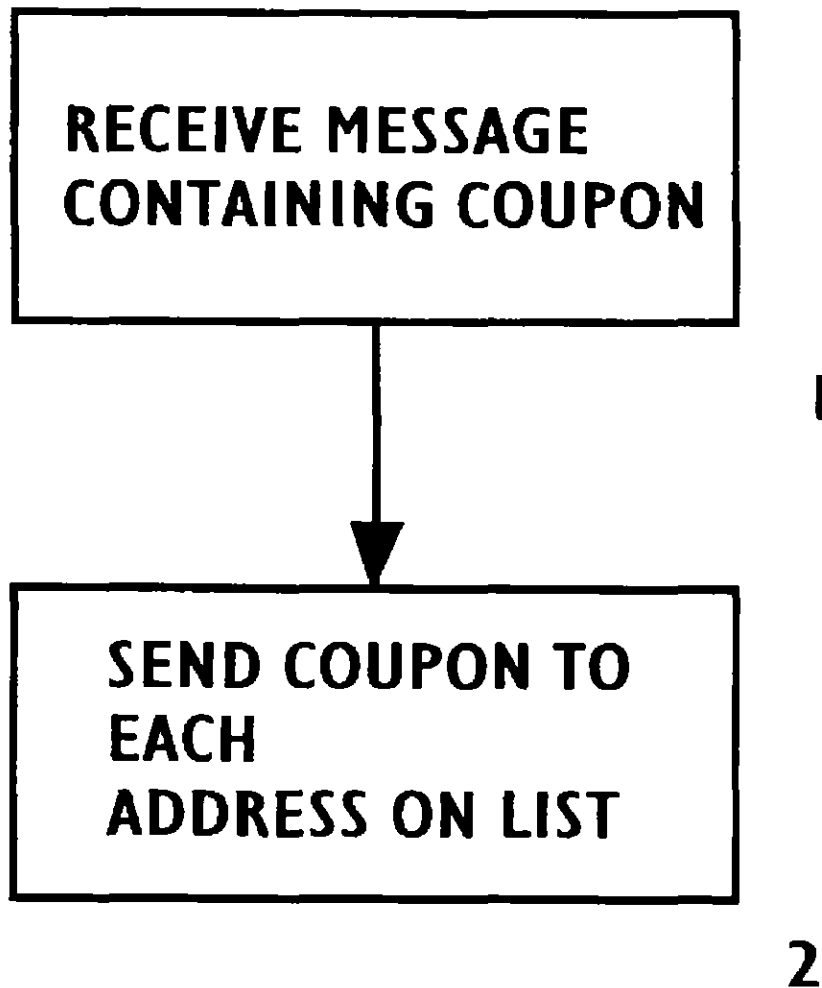


FIG. 19

6,067,526

2

1 SYSTEM AND METHOD FOR DISTRIBUTING COUPONS THROUGH A SYSTEM OF COMPUTER NETWORKS

This Application is a Continuation of copending application Ser. No. 09/100,868 of KEN R. POWELL filed Jun. 22, 1998 for SYSTEM AND METHOD FOR CONTROLLING DISTRIBUTION OF COUPONS, the contents of which is hereby incorporated by reference, which is a Continuation of copending application Ser. No. 08/603,482 of KEN R. POWELL filed Feb. 20, 1996 for SYSTEM AND METHOD FOR DISTRIBUTING COUPONS THROUGH A SYSTEM OF COMPUTER NETWORKS, now U.S. Pat. No. 5,806,044 the contents of which are hereby incorporated by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to a retail system and, more particularly, to a system and method for distributing discount coupons through a system of computer networks.

2. Description of Related Art

Discount coupons are a popular means to stimulate sales of products such as grocery store items. In 1992, approximately 310 billion coupons were distributed and 7.7 billion coupons were redeemed, saving customers \$4 billion. It has been estimated that in-store couponing coupled with advertising increases sales by 544%.

A typical marketing scheme involves placing coupons in a newspaper, by printing the coupons in the newspaper or by inserting coupon inserts into the newspaper, and allowing customers to bring the printed coupons to a store for redemption. One problem with this scheme is that the redemption rate is typically only a few percent of the coupons printed, the unredeemed coupons representing an overhead associated with this scheme. To alleviate this overhead, another marketing scheme involves distributing the coupons in the store, thereby avoiding the cost of printing coupons in a newspaper, and capitalizing on the fact that 66% of buyer decisions are made at the time of product purchase. Both the in-store scheme and the newspaper scheme, however, are susceptible to fraud by an unscrupulous retailer that requests reimbursement payments by presenting unredeemed coupons to the clearing house. Other schemes include delivering coupons to customers through the mail, distributing coupons in or on the product package, and distributing coupons at checkout. All of these schemes have an overhead cost of handling the coupons and of sending the redeemed coupons to a clearing house to enable product manufacturers to reimburse retailers for the reduction in proceeds resulting from coupon redemptions.

SUMMARY OF THE INVENTION

According to an aspect of the present invention, there is a retail system in a system including a plurality of portable cards, a plurality of homes, a store and a routing system for receiving a signal and generating network addresses in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links. The retail system comprises a first computer; and a second computer, wherein the first computer includes circuitry for sending first signals to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to a second computer, to cause the routing system to generate a plurality of network addresses, each of the plurality of

network addresses corresponding to a respective computer in a respective computer network, and wherein the second computer includes circuitry for receiving first signals, and wherein the system further includes: a plurality of homes, each located in one of the plurality of homes, responsive to a first signal received by the second computer, for sending a card signal to a portable card in the plurality of cards, the card signal corresponding to the product; and a second processor, in the store, for receiving the card signal from a portable card in the plurality of cards.

According to another aspect of the present invention there is a method in a system including a store, a plurality of portable cards, a plurality of homes, and a routing system for receiving a signal and generating network addresses in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links. The method comprises sending, from a first computer, a first signal to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to a second computer, to cause the routing system to generate a plurality of network addresses, each of the plurality of network addresses corresponding to a respective computer in a respective computer network; receiving first signals, and the step, performed in one of the homes, of sending, responsive to a first signal received in the previous step, a card signal to a portable card in the plurality of cards, the card signal corresponding to the product, and the step of subsequently, moving the portable card to the store, and the step, performed in the store, of receiving the card signal from the portable card.

According to yet another aspect of the present invention, there is a retail system in a system including a plurality of portable cards, a plurality of homes, a store and a routing system for receiving a signal and generating a routing signal in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links. The retail system comprises a first computer; and a second computer, wherein the first computer includes circuitry for sending first signals to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to the second computer, to cause the routing system to generate a plurality of routing signals, each of the plurality of routing signals corresponding to a respective portion of a signal path between the first and second computers, and wherein the second computer includes circuitry for receiving first signals, and wherein the system further includes: a plurality of homes, each located in one of the plurality of homes, responsive to a first signal received by the second computer, for sending a card signal to a portable card in the plurality of cards, the card signal corresponding to the product; and a second processor, in the store, for receiving the card signal from a portable card in the plurality of cards.

According to yet another aspect of the present invention, there is a method in a system including a store, a plurality of portable cards, a plurality of homes and a routing system for receiving a signal and generating a routing signal in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links. The method comprises sending, from a first computer, a first signal to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to a second computer, to cause the routing system to generate a plurality of routing signals, each of the plurality of routing signals corresponding to a respective portion of a signal path between the first

6,067,526

3

and second computers; receiving first signals, and the step, performed in one of the homes, of sending, responsive to a first signal received in the previous step, a card signal to a portable card in the plurality of cards, the card signal corresponding to the product, and the step of subsequently, moving the portable card to the store, and the step, performed in the store, of receiving the card signal from the portable card.

According to yet another aspect of the present invention, there is a retail system in a system including a store, a plurality of portable cards, a plurality of homes, and a routing system for receiving a signal and generating network addresses in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links. The retail system comprises means for sending, from a first computer, a first signal to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to a second computer, to cause the routing system to generate a plurality of network addresses, each of the plurality of network addresses corresponding to a respective computer in a respective computer network; means for receiving first signals; means for sending, responsive to a first signal received by the previous means, a card signal to a portable card in the plurality of cards, the card signal corresponding to the product, the means for sending being located in one of the homes; and means for receiving the card signal from the portable card in the store.

According to yet another aspect of the present invention, there is a retail system in a system including a store, a plurality of portable cards, a plurality of homes, and a routing system for receiving a signal and generating network addresses in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links. The retail system comprises means for sending, from a first computer, a first signal to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to a second computer, to cause the routing system to generate a plurality of routing signals, each of the plurality of routing signals corresponding to a respective portion of a signal path between the first and second computers; means for receiving first signals; means for sending, responsive to a first signal received by the previous means, a card signal to a portable card in the plurality of cards, the card signal corresponding to the product, the means for sending being located in one of the homes; and means for receiving the card signal from the portable card in the store.

According to yet another aspect of the present invention, there is a retail system in a system including a first computer, a second computer, a plurality of portable cards, a plurality of homes, a store with a first receiver that receives signals from the plurality of portable cards, and a routing system for receiving a signal and generating network addresses in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links. The retail system comprises circuitry, in the first computer, that sends first signals to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to the second computer, to cause the routing system to generate a plurality of network addresses, each of the plurality of network addresses corresponding to a respective computer in a respective computer network, thereby enabling the second computer to receive first signals; and a plurality of home computers, each located in one of the plurality of homes, responsive to a first signal received by the second

4

computer, for sending a card signal to a portable card in the plurality of cards, the card signal corresponding to the product.

According to yet another aspect of the present invention, there is a method in a system including a store, a plurality of portable cards, a plurality of homes, and a routing system for receiving a signal and generating network addresses in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links. The method comprises sending first signals from a first computer to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to a second computer, to cause the routing system to generate a plurality of network addresses, each of the plurality of network addresses corresponding to a respective computer in a respective computer network, thereby enabling the second computer to receive first signals. The method further comprises the step, performed in one of the homes, of sending, responsive to a first signal received by the second computer, a card signal to a portable card in the plurality of cards, the card signal corresponding to the product. The method further comprises the step of subsequently, moving the portable card to the store, and the step, performed in the store, of receiving the card signal from the portable card.

According to yet another aspect of the present invention, there is a retail system in a system including a first computer, a second computer, a plurality of portable cards, a plurality of homes, a store with a first receiver that receives signals from the plurality of portable cards, and a routing system for receiving a signal and generating a routing signal in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links. The retail system comprises circuitry, in the first computer, that sends first signals to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to the second computer, to cause the routing system to generate a plurality of routing signals, each of the plurality of routing signals corresponding to a respective portion of a signal path between the first and second computers, thereby enabling the second computer to receive first signals; and a plurality of home computers, each located in one of the plurality of homes, responsive to a first signal received by the second computer, for sending a card signal to a portable card in the plurality of cards, the card signal corresponding to the product.

According to yet another aspect of the present invention, there is a method in a system including a store, a plurality of portable cards, a plurality of homes, and a routing system for receiving a signal and generating network addresses in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links. The method comprises sending first signals from a first computer to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to a second computer, to cause the routing system to generate a plurality of network addresses, each of the plurality of network addresses corresponding to a respective computer in a respective computer network, thereby enabling the second computer to receive first signals. The method further comprises the step, performed in one of the homes, of sending, responsive to a first signal received by the second computer, a card signal to a portable card in the plurality of cards, the card signal corresponding to the product. The method further comprises the step of subsequently, moving the portable card to the

6,067,526

6

5 store, and the step, performed in the store, of receiving the card signal from the portable card.

According to yet another aspect of the present invention, there is a retail system in a system including a first computer; a second computer, a plurality of portable cards, a plurality of homes, a store with a first receiver that receives signals from the plurality of portable cards, and a routing system for receiving a signal and generating a routing signal in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links. The retail system comprises circuitry, in the first computer, that sends first signals to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to the second computer, to cause the routing system to generate a plurality of routing signals, each of the plurality of routing signals corresponding to a respective portion of a signal path between the first and second computers, thereby enabling the second computer to receive first signals; and a plurality of home computers, each located in one of the plurality of homes, responsive to a first signal received by the second computer, for sending a card signal to a portable card in the plurality of cards, the card signal corresponding to the product.

According to yet another aspect of the present invention, there is a method in a system including a store, a plurality of portable cards, a plurality of homes and a routing system for receiving a signal and generating a routing signal in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links. The method comprises sending first signals from a first computer to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to a second computer, to cause the routing system to generate a plurality of routing signals, each of the plurality of routing signals corresponding to a respective portion of a signal path between the first and second computers, thereby enabling the second computer to receive first signals. The method further comprises the step, performed in one of the homes, of sending, responsive to a first signal received by the second computer, a card signal to a portable card in the plurality of cards, the card signal corresponding to the product. The method further comprises the step of subsequently, moving the portable card to the store, and the step, performed in the store, of receiving the card signal from the portable card.

According to yet another aspect of the present invention, there is a retail in a system including a plurality of portable cards, a store with a first receiver that receives signals from the plurality of portable cards, a plurality of homes, and a routing system for receiving a signal and generating network addresses in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links. The retail system comprises means for sending first signals from a first computer to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to a second computer, to cause the routing system to generate a plurality of network addresses, each of the plurality of network addresses corresponding to a respective computer in a respective computer network, thereby enabling the second computer to receive first signals; and means for sending, responsive to a first signal received by the second computer, a card signal to a portable card in the plurality of cards, the card signal corresponding to the product, the means for sending being located in one of the homes.

According to yet another aspect of the present invention, there is a retail system in a system including a plurality of portable cards, a store with a first receiver that receives signals from the plurality of portable cards, a plurality of homes, and a routing system for receiving a signal and generating network addresses in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links. The retail system comprises means for sending first signals from a first computer to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to a second computer, to cause the routing system to generate a plurality of routing signals, each of the plurality of routing signals corresponding to a respective portion of a signal path between the first and second computers, thereby enabling the second computer to receive first signals; and means for sending, responsive to a first signal received by the second computer, a card signal to a portable card in the plurality of cards, the card signal corresponding to the product, the means for sending being located in one of the homes.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1A and 1B are a schematic diagram of a system of computer networks, in accordance with a first preferred embodiment of the present invention.

FIG. 2 is a diagram emphasizing a part of the system shown in FIGS. 1A and 1B.

FIGS. 3A, 3B, and 3C are diagrams showing a discount coupon sent through a system of computer networks from computer 230 to Home 160.

FIG. 4 is a diagram of a personal computer inside Home 160.

FIG. 5 is the display of the personal computer showing an electronic coupon received through the system of computer networks into home 160.

FIG. 6 is a side view of the card-writing device in the personal computer for writing coupons onto portable cards in home 160.

FIGS. 7A and 7B are a schematic diagram of a retail store in the preferred system.

FIGS. 8A, 8B, and 8C are enlarged views of some products shown in FIGS. 7A and 7B.

FIG. 9 is a flow chart of a processing performed in the preferred system.

FIG. 10A is a plan view of one of the customer cards in the preferred system.

FIG. 10B is a side view of the card shown in FIG. 10A.

FIG. 10C is an enlarged, partial view of the card shown in FIG. 10A.

FIG. 11 is a block diagram of the customer card.

FIG. 12 is a block diagram of the personal computer shown in FIG. 4.

FIG. 13 is a block diagram of the check-out station shown in FIG. 7B.

FIG. 14 is a flow chart of a step of the processing shown in FIG. 9.

FIGS. 15A and 15B are diagrams of some memory contents of a customer card at different points in time.

FIG. 16 is a flow chart of another step of the processing shown in FIG. 9.

FIG. 17 is a flow chart of the processings of step 9010 and of step 9035 of FIG. 9.

6,067,526

7

FIG. 18 is a block diagram of a system including a clearing house and multiple check-out stations.

FIG. 19 is a flow chart of a possible processing in the preferred system.

The accompanying drawings which are incorporated in and which constitute a part of this specification, illustrate embodiments of the invention and, together with the description, explain the principles of the invention, and additional advantages thereof. Throughout the drawings, corresponding parts are labeled with corresponding reference numbers.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. 1A and 1B show a system of computer networks for distributing coupons in accordance with a first preferred embodiment of the present invention. Computer networks 105, 111, 115, 130, 135, 138, 125, 279, 142, 148, 144, 146, 281, and 151 are interconnected. Each computer network includes a plurality of computers. Each of homes 152, 154, 156, 158, 160, 162, 164, 166, 168, 171, 172, 174, 176, 178, 181, 182, 310, and 320 is coupled to one of the computers networks via a respective telephone signal path 177.

The system includes portable customer cards 215, 225, 235, 245, 255, 275, 285, 190, 315, 325, 335, 345, 355, 365, 367, 369, 375, and 385. Each customer card is a portable customer card, approximately the size of a credit card. Each card contains a random access memory for storing electronic coupons.

A computer 230 within network 115 stores electronic coupons and distributes the stored coupons to the homes. As represented schematically in FIGS. 1A and 1B, a customer carries her respective card from her home to a store. A computer in each home receives a coupon from computer 230, via one or more of the computer networks, and stores the received coupon onto one of the cards. For example, a computer in home 160 receives a coupon signal from computer 230 via networks 115, 130, and 135 and stores the received coupon onto card 190.

FIG. 2 shows a section of the preferred system, emphasizing a path between computer 230 and home 160. Network 115 is a local area network (LAN), network 130 is a wide area network (WAN), network 135 is an LAN, and network 279 in a LAN.

Network 115 includes a plurality of first computers, computers 234, 238, 230, 236, and 232. Each of these first computers has a respective network address uniquely identifying the computer on network 115. The first computers can communicate with each other by sending data packets in a certain format. Each network-115-packet has a field containing the destination address of the packet. Each network-115-packet is in a format conforming to the communication protocol of network 115, meaning, for example, that the packet has a destination address field offset a certain number of bits from the start of the packet, and that the destination address field has a certain number of bits. Computer 230 includes circuitry (hardware and software) for sending a data packet through transmission cable 117. The circuitry includes software for constructing a packet, having the packet format of network 115, containing a discount coupon identifying a product.

Network 130 includes a second plurality of computers, computers 254, 250, 252, 258, 256, 262, 260, and 272. Computer 230 sends this product-identification signal to home 160 via computer 238, as described in more detail below. Each of these second computers has a respective

8

second network address uniquely identifying the computer on network 130. The second computers communicate with each other by sending a packet in the format for network 130.

The data packet from computer 230 includes a destination address field allowing computer 238 to recognize that the data packet is to be received by computer 238. Computer 238 has an address on both LAN 115 and WAN 130, meaning that computer 238 has circuitry for recognizing an its own address in a network-115-formatted packet sent over network 115, and has circuitry for recognizing an its own address in a network-130-formatted packet sent over network 130. Thus, computer 238 acts to route packets between networks 115 and 130. In other words, computer 238 includes circuitry, responsive to an address on network 115, for receiving a packet in the format of network 115, containing an electronic coupon identifying a certain product, and for sending a second packet in the format of network 130, the second packet containing a signal identifying the certain product. When computer 238 receives a packet destined for computer 276, computer 238 constructs a packet addressed to computer 272, using the protocol for network 130.

Computer 272 has an address on both WAN 130 and LAN 135 and, therefore, computer 272 acts to route packets between networks 130 and 135. When computer 272 receives the packet, computer 272 constructs a packet addressed to computer 276, using the protocol of network 135.

More specifically, computer 230 constructs an "IP" packet addressed to computer 276, using the Internet Protocol (IP). Computer 230 then imbeds this IP packet within a network-115-formatted packet addressed to computer 238, using the protocol of network 115. When computer 238 receives the packet, computer 238 reads the IP address, determines that the IP packet should be sent over network 130, and imbeds the IP packet within an network-130-formatted packet addressed to computer 272, using the protocol of network 130.

When computer 272 receives the packet, computer 272 reads the IP address, determines that the IP address corresponds to computer 276, and imbeds the IP packet in a packet addressed to computer 276, using the protocol of network 135.

FIG. 3A shows data packet 3002 in the format of network 115, sent by computer 230 through cable 117. Header field 3010 includes a 20 bit destination address field 3011 identifying computer 238 on network 115. Destination address field 3011 is 16-bits removed from the beginning of the data package 3002. Header 3010 contains other fields, including a 20-bit field containing the address of the sender of packet 3002, and a field containing data correction bits. Field 3020 includes an Internet Protocol (IP) address field 3021 identifying computer 276. Field 3030 includes electronic coupon information in ASCII (American Standard Code for Information Interchange) text form.

Computer 238, which resides on both LAN 115 and WAN 130, includes circuitry to translate packet 3002 received from computer 230, into packet 3004 shown in FIG. 3B. Packet 3004 includes header field 3012. Header 3012 includes a 16 bit destination address field 3013 identifying computer 272 on WAN 130. Address field 3013 is 32-bits removed from the start of packet 3004. Header 3012 has other fields, including a field identifying the sender of packet 3004, and a field containing data correction bits.

Computer 238 determines that the packet should be sent to computer 272 on network 130 by reading a routing table.

6,067,526

9

The routing table has an entry for network 135. The entry for network 135 identifies network 130 and computer 272 as the path to be used when computer 238 is sending a packet to a computer on network 135. Thus, computer 238 constructs packet 3004 in response to IP address field 3021 in packet 3002.

As shown in FIG. 2, computer 238 sends a packet to computer 272, via computers 250, 254, 258, and 260.

In other words, each packet is essentially a type of signal having a network address of a certain length and having a certain number of digits. A signal on one network may include a first network address O1 digits removed from the start of the signal. A signal another network may include a second network address is O2 digits removed from the start of the signal, wherein O1 is not equal to O2, and the first network address includes N1 digits and the second network address includes N2 digits, wherein N1 is not equal to N2.

Computer 272, which resides on both WAN 130 and LAN 135, includes circuitry to translate packet 3004 received from computer 238, into packet 3006 shown in FIG. 3C. Packet 3006 includes header field 3014. Header 3014 includes an address field 3015 identifying computer 276 on LAN 135. Header 3014 includes a 16 bit destination address field 3015 identifying computer 276 on LAN 135. Address field 3015 is 24-bits removed from the start of packet 3006. Header 3014 has other fields, including a field identifying the sender of packet 3006, and a field containing data correction bits.

Thus, the preferred system may be conceptualized as computers sending packets containing electronic coupons. The preferred system may also be conceptualized as programs, running on the computers, that send electronic mail (Email) messages to each other. Each Email message includes one or more of the packets described above. The programs include a coupon server (not shown), running on computer 230, for constructing the Email message and sending the Email message to a customer, and Mail Transfer Agents and a User Agent (not shown) that route the Email messages between each other and ultimately store an Email message into an electronic mail box for the recipient of the message. An electronic mailbox is a memory area readable by the owner of the mail box. For example, FIG. 2 shows mail box 277 readable by personal computer 400 in home 160.

FIG. 4 shows a personal computer 400 within home 160. Computer 400 includes a modem 410, a CRT display 420, a keyboard 425, a mouse 423, and a coupon-writing device 415. To receive an electronic coupon, the user establishes a telephone connection between computer 400 and computer 276 through modem 410. Subsequently, the user logs onto computer 276 and invokes a program to read Email stored in mailbox 277.

FIG. 5 shows CRT display 420 after the mail-reading program reads a coupon message from mailbox 277. As shown in FIG. 5, coupon data 3030 includes the ASCII text of an electronic mail (Email) message. Message field 5010 identifies the sender and receiver of the message, "couponhouse@usretail.com" being the Email address of the coupon server on node 230 and "bsmith@aol.com" being the Email address of the customer residing in home 160. Message field 5015 is user readable text identifying the coupon. Message field 5020 is electronic coupon information encoded in text format. The user sends coupon data 3030 to device 415 by issuing a print command and specifying device "SCW:", which is a name designating card-writing device 415. A driver program for device 415 receives

10

the text data and translates the data into a certain binary format, described below, and sends the binary data to device 415. Device 415 couples to a customer card 190 and sends data to card 190.

FIG. 6 shows a side view of card-writing device 415, including interface slot 4170. Interface slot 4170 has a width sufficient to accommodate the width of one of the customer cards 190. When a card 190 is in interface slot 4170, conductive contact 4177 inside interface slot 4170 touches contact 2427 (described below) on the customer card. Interface slot 4170 has other contacts (not shown) for touching the other card contacts 2420 (described below).

FIGS. 7A and 7B show grocery store 1000. FIGS. 7A and FIG. 7B are each a partial view of store 1000. Customers 210, 220, 231, 240, 250, 270, 280, and 290, shop in the store. Before shopping in the store, each of these customers obtained a customer card. For example, customer 231 obtained customer card 235 from a bank, by completing an application for the bank. The application contained questions to collect demographic data, including birth date, income level, past buying patterns, geographic location, size of family, level of education, and job-related data. The bank subsequently wrote customer identification data for customer 231 onto customer card 235, and issued customer card 235 to customer 231, and sent the customer's demographic data to a clearinghouse which then stored the demographic data on disk. Each of customers 210, 220, 240, 250, 270, 280, and 290 obtains a respective customer card in a similar manner. In other words, for each customer the preferred method writes demographic data for the customer onto a disk in the market research center, and writes personal identification data for the customer onto a respective card for the customer.

After redemption data, including customer identification data from a plurality of cards, is compiled and sent to a market research center, as described below, the customer identification data is used to access the corresponding demographic data, thereby providing the manufacturer with valuable marketing data on coupon program effectiveness and customer demographics.

Store 1000 includes shelves 10, 20, and 30, defining aisles between the shelves. The supermarket has a plurality of product areas, each corresponding to a respective product. Product Area 110 has Acme brand ammonia. Product Area 120 has Old World brand pasta. Product Area 271 has Lighthouse brand light bulbs.

More specifically, Product Area 110 has bottles of ammonia 112 grouped together on multiple shelves. Bottles of ammonia 112 are contiguously grouped, meaning that no other product is between any two bottles of ammonia 112.

FIG. 8A shows an enlarged view of some of the bottles of ammonia 112. Each bottle of ammonia has a common Universal Product Code (UPC) label 114, which is a group of parallel lines that encodes a number that uniquely identifies acme ammonia. In other words, label 114 is different than labels of units of other products. Each bottle of ammonia 112 also has a common character label 113. Character label 113 is "ACME AMMONIA." Label 113 is different than labels of units of other products.

Product Area 120 has boxes of pasta 122 grouped together on multiple shelves. Boxes of pasta 122 are contiguously grouped, meaning that no other product is between any two boxes of pasta 122.

FIG. 8B shows an enlarged view of some of the boxes of pasta 122. Each box of pasta 122 has a common Universal Product Code (UPC) label 124, which is a group of parallel

6,067,526

11

lines that encodes a number that uniquely identifies Old World pasta. In other words, label 124 is different than labels of units of other products. Each box of pasta 122 also has a common character label 123. Character label 123 is "OLD WORLD PASTA." Label 123 is different than labels of units of other products.

Product Area 271 has boxes of light bulbs 132 grouped together on multiple shelves. Boxes of light bulbs 132 are contiguously grouped, meaning that no other product is between two boxes of light bulbs 132.

FIG. 8C shows an enlarged view of some of the boxes of light bulbs 132. Each box of light bulbs 132 has a common Universal Product Code (UPC) label 134, which is a group of parallel lines that encodes a number that uniquely identifies Lighthouse light bulbs. In other words, label 134 is different than labels of other products. Each box 132 also has a common character label 133. Character label 133 is "LIGHTHOUSE LIGHT BULBS." Label 133 is different than labels of other products.

Similarly, other product area in the store each have a set of respective products contiguously grouped together and a corresponding product station adjacent to the products. The respective units of a certain product have a common label, different than labels on units of other products, that uniquely identifies the certain product. Product area 140 has bottles of ketchup 142 contiguously grouped together. Product area 284 has loaves of bread 162 contiguously grouped together. Product area 170 has cartons of milk 172 contiguously grouped together. Product area 180 has packages of bacon 182. Product area of 191 has packages of butter 192 contiguously grouped together.

Product area 150 has boxes of cereal 152 contiguously grouped together.

FIG. 9 shows a processing performed in the preferred system. Computer 230 sends an electronic coupon, in the form of an E-mail message, through computer networks 115, 130, and 135. (Step 9003). A customer, such as customer 290, receives the electronic coupon, through modem 410, onto her home computer (step 9005), and writes the coupon onto her customer card 190 using writing device 415 (step 9010). The customer then brings her respective customer card to a store 1000. (step 9020).

At store 1000, the customer removes products from shelves 10, 20, and 30 and brings the products to checkout station 900 (step 9025). In other words, while shopping in store 1000, each of customers 210, 220, 231, 240, 250, 270, 280, and 290 carries his or her respective customer card. Customer 290 carries card 190, customer 220 carries card 225, customer 231 carries card 235, customer 240 carries card 245, customer 250 carries card 255, customer 270 carries card 275, customer 280 carries card 285, and customer 290 carries card 190. Each customer tows a shopping cart to hold selected products. Customer 210 tows cart 212, customer 220 tows cart 222, customer 231 tow cart 232, customer 240 tows cart 242, customer 250 tows cart 252, customer 270 tows cart 291, customer 280 tows cart 282, and customer 290 tows cart 292. The customer then removes a product from the shelf and places the removed product into her cart. The customer thus shops throughout the store.

Checkout station 900 then scans the products and determines a price for each product depending on whether the customer card contains coupons for the scanned product (step 9035). More specifically, the customer redeems the electronic coupons at the checkout area, by inserting her customer card into checkout station 915. For example, a customer such as customer 240 in FIG. 7B completes the

12

purchase of her selected products 243 by transferring products 243 from her cart 242 to counter 900, and by inserting card 245 into checkout station 915. Subsequently, a checkout clerk (not shown) scans each selected product past UPC bar code reader 910. Bar code reader 910 is an optical detector. In other words, bar code reader 910 detects an electromagnetic signal. A processor coupled to station 915 and reader 910 determines whether the most recently scanned product is on a discount list stored in card 245. If the most recently scanned product is identified in this discount list, a price for the product is determined using the discount data corresponding to the product, and the resulting price is displayed on display 917. Checkout counter 900 scans and processes each product 243 in a similar manner.

Similarly customer 280 in FIG. 7B follows the procedure of FIG. 9 by transferring products 283 from her cart 282 to counter 900, and by inserting card 285 into checkout station 915; and the checkout clerk (not shown) scans each selected product 283 past UPC bar code reader 910. Customer 270 follows the procedure of FIG. 9 by transferring products 273 from her cart 291 to counter 900, and by inserting card 275 into checkout station 915; and the checkout clerk (not shown) scans each selected product 273 past UPC bar code reader 910.

Because of the large number of electronic coupons that may be available to a customer, a customer such as customer 310 may wish to insert their card into display station 710, to review what coupons are currently stored on the card. Station 710 may also present the viewer with additional information about the products identified by the coupons on the card. Station 710 is described in detail in application of KEN R. POWELL for SYSTEM AND METHOD FOR DISPLAYING PRODUCT INFORMATION IN A RETAIL SYSTEM, Ser. No. 08/603,483 filed on Feb. 20, 1996, now U.S. Pat. No. 5,890,135 issued Mar. 30, 1999 the contents of which is herein incorporated by reference.

Step 9005 includes a step of reading an electronic mail (Email) message. An Email message from computer 230, for the user of PC 400 in home 160, resides in an electronic mailbox 277, which is a memory area on computer 276. The user of PC 400 dials into computer 276 using a telephone line, submits appropriate user identification including a password, and then invokes a program that reads the Email message from the memory of computer 276 into the memory of PC 400.

The user then executes the driver for device 415, by printing the Email message to device "SCW:". The driver translates the textual coupon shown in FIG. 5 into a binary format, described below. Thus, the driver program and device 415 are essentially responsive to the coupon data stored in packet 3004, which was constructed by routing computer 238.

To prevent an unscrupulous user from repeatedly writing a single Email coupon onto a customer card, which would be contrary to the intent of the coupon issuer, the driver maintains a list of Email coupons already processed, including the time and date of the Email as shown in field 5010 of FIG. 5. Before writing an electronic coupon to a customer card, the driver compares the corresponding Email message to the list to verify that an identical coupon has not been processed.

Further, to prevent a user from changing the date and time field of a previously-printed Email message and reprinting the modified message to thwart this protection mechanism, each Email message from the coupon server on node 230 contains the encoded date and time in field 5020. Thus, the

6,067,526

13

driver both verifies that an Email message with the date and time has not been previously processed, and verifies that the unencoded date and time in area 5010 matches the encoded date and time in field 5020.

There are two preferred methods for getting the Email address for PC 400 to the coupon server on node 230, to allow the server to send a coupon to PC 400. The first preferred method is to program the coupon server using data collected from sources off of the Internet. The second preferred method is to allow the user of PC 400 to send her Email address, through the computer networks, to node 230.

To implement this second method, it is presently preferred that the Email address for the user of PC 400 be sent by a web browser for the World Wide Web (WWW). With one scheme, a user sends an Email message requesting a coupon for a specific product, by invoking the browser to select Hypertext in a document advertising the product. Selection of the Hypertext invokes a "Form" in the document, causing the browser to prompt the user for her Email address, accept the Email address as keyboard input from the user, and construct an Email message addressed to the server on node 230. The message contains the Email address given by the user and data identifying the product corresponding to the selected hypertext. Upon receiving the message, the coupon server sends an Email message to the user's address.

An alternate scheme is to have the user of PC 400 join a club, by invoking the browser to select Hypertext in a document advertising the club. The club is essentially a mailing list for certain types of coupons. Selection of the hypertext invokes a Form in the document, causing the browser to prompt the user for her Email address, accept the Email address as keyboard input from the user, and construct an Email message addressed to the server on node 230. The message contains the Email address given by the user and data identifying the club corresponding to the selected hypertext. Upon receiving the message, the coupon server adds the Email address to the list for the club identified in the message. Subsequently, some event causes the coupon server to send a coupon to each address in the list. (FIG. 19)

One such event would be receipt, by the coupon server, of an Email message from a coupon issuer. (FIG. 19 Step 1) The coupon issuer may be a distributor of the product corresponding to the coupon. The coupon server, in this case, acts as "mail exploder," and essentially echoes the single Email message from the coupon issuer to each member of the list. (FIG. 19 step 2)

FIG. 10A shows a plan view of customer card 190, and FIG. 10B shows a side view of card 190. Card 190 is 8.5 cm by 5.4 cm, the length and width of a typical financial credit card. Card 190 is slightly thicker than a typical financial credit card. Card 190 includes a magnetic stripe 2410, interface contacts 2420 for communication with the product stations and the checkout station, and embossed area 2430 for displaying the card owner's name. Magnetic stripe 2410 allows a conventional credit card stripe reader to read basic data from the card. Magnetic stripe 2410 is not necessary to the operation of the preferred embodiment of the invention, described in more detail below.

FIG. 10C shows interface contacts 2420 in more detail. Interface contacts 2420 are configured in accordance with ISO7816-2: 1988(E), Identification cards—Integrated circuit (s) cards with contact—Part 2: Dimensions and locations of the contacts, promulgated by the International Organization for Standardization (ISO), and available from the American National Standards Institute (ANSI), 11 West 42nd Street, New York, N.Y. 10036. According to ISO

14

7816-2, contact 2421 is assigned to VCC (supply voltage), contact 2422 is assigned to RST' (reset signal), contact 2423 is assigned to CLK (clock signal), contact 2424 is reserved for future use, contact 2425 is assigned to GND (ground), contact 2426 is assigned to VPP (program and voltage), contact 2427 is assigned to I/O (data input/output), and contact 2428 is reserved for future use. Card 190 communicates with the product stations and the checkout stations through contact 2427 using a half duplex scheme, meaning that contact 2427 is for communicating data signals either to or from the card.

FIG. 11 is a block diagram of customer card 190, including central processing unit 2450, memory 2460, and battery 2470 for supplying power to interface 2425, processor 2450, and memory 2460. Memory 2460 is a random access, addressable device. Station interface 2425 includes a serial to parallel converter for transferring data signals between contact 2427 and CPU 2450 over parallel bus 2452. Memory 2460 stores a program 2465 executed by processor 2450, customer identification data 2467, and authorization data 2468. Customer identification data 2467 includes a sequence of digits that uniquely identifies the holder of the card. Customer identification data 2467 includes the card holder's social security number. For example, identification data 2467 in customer card 235 uniquely identifies customer 231. Authorization data 2468 also includes date data indicating an expiration date for the card. Authorization data 2468 also contains a field identifying that the card is a customer card.

Memory 2460 also stores electronic coupons in coupon list 2435. When a customer inserts a customer card into device 415, processor 2450 receives an identification code for the product from interface 415 and adds the code to the list 2435.

Each of customer cards 215, 225, 235, 245, 255, 275, 285, 315, 325, 335, 345, 355, 365, 367, 369, 375, and 385 has the same hardware structure as customer card 190.

FIG. 12 shows a block diagram PC 400, including central processing unit 435, memory 440, and AC-DC transformer 450. Memory 440 is a random access, addressable device. Memory 440 stores driver program 445 for sending coupons to card-writing device 415. CPU 435 executes driver 445.

FIG. 13 is a block diagram of checkout counter 900 shown in FIG. 7B. Disk 925 provides long term storage. CPU 950 executes instructions in random access, addressable memory 920. Checkout counter 900 also includes UPC reader 910 for reading bar codes on products, and checkout station 915 for communicating with a customer card. Since station 915 is in store 1000 and card-writing device 415 is in home 160, which is a separate building from store 1000, station 915 is spatially removed from card-writing device 415.

CPU 950 and program 922 act to detect a product scanned by UPC reader 910, determine a reference price for the product, search for the product's identification in the memory of a customer card, and deduct a discount from the reference price if the product is identified in the customer card memory. CPU 950 then displays the price of the product on display 917. In other words, CPU 950 and program 922 act to receive a purchase signal identifying a product, to receive to receive a card signal, and to determine a price for the product depending on whether the product identified by the card signal corresponds to the product identified by the purchase signal.

CPU 950 writes coupon redemption data onto disk 925. Periodically, CPU 950 sends the redemption data to an electronic clearing house through modem 930.

6,067,526

16

15

FIG. 14 shows the processing of step 9010 of FIG. 9 in more detail. CPU 435 executes device driver program 445 in memory 440 to perform the processing shown in FIG. 14. When a person prints text to device "SCW:", device driver program 445 receives the text and verifies that identical text has not been processed before, by comparing the text received with a list of previous Email messages received. Program 445 also compares the time and date in field 5010 of the text with the encoded time and date in field 5020 of the text, to verify that the text is an authentic Email message from the coupon server on computer 230. If the Email message is an authentic message that has not been processed before, program 445 then translates the text in field 5020 into binary coupon data. (step 14005).

Subsequently, program 445 sends a reset command to card interface 415, causing interface 415 to reset the card by applying a clock signal to card contact 2423. (The card then answers the reset by sending an answer-to-reset data block, including identification data 2467 and authorization data 2468, through card contact 2427. Authorization data 2468 contains a card-type code indicating a customer card.) Program 445 then receives the answer-to-reset data block from card interface 415 (step 14010).

The communication protocol between interface 415 and a customer card is described in more detail in ISO/IEC 7816-3: 1989 (E), Identification cards—Integrated circuit(s) cards with contacts—Part 3: Electronic signals and transmission protocols; and ISO/IEC 7816-3: 1989/Amd.1: 1992 (E), Part 3: Electronic signals and transmission protocols, AMENDMENT 1: Protocol type technique=1, synchronous half duplex block transmission protocol. Both of these standards are promulgated by the International Organization for Standardization (ISO) and distributed by the American National Standards Institute (ANSI).

CPU 435 analyzes the authorization data in the received answer-to-reset block to determine whether the card is a customer card that is eligible to receive electronic coupons from interface 415 (step 14020). CPU 435 determines that the card is a customer card if the received authorization data contains a card-type code indicating a customer card. If the card is a customer card, meaning that the authorization data is authorization data 2468, CPU 435 determines if the card is eligible to receive electronic coupons if authorization data 2468 contains certain codes, and the date and time in Email field 5010 is not later than the date data in authorization data 2468. If the card is an eligible customer card, CPU 435 sends to the customer card a block containing a station-type code, indicating a PC interface, and the binary coupon data (step 14040). The binary coupon data includes an identification code for the product received from PC 400 (Old World Pasta 122) and the discount currently being offered for that product. If the card is not an eligible customer card (step 14020), there is no further processing.

FIG. 15A shows some of the contents list 2435, starting at location 30 memory 2460, of customer card 190, before CPU 435 of PC 400 executes step 14040. An electronic coupon is represented by three rows in list 2435: a 10 digit UPC product code in the first row, discount format data in the second row ("1" signifying cents, "2" signifying percentage), and discount quantity data in the third row. In FIG. 15SA, the customer card is storing two electronic coupons. After CPU 435 executes step 14040 (thereby sending another electronic coupon to the customer card), CPU 2450 in customer card 190 receives the data and adds the data to list 2435, resulting in three electronic coupons in list 2435 as shown in FIG. 15B.

In list 2435 in FIGS. 15A and 15B, the memory field having the product code 7170312350 corresponds to the

UPC code on boxes of Lighthouse Light Bulbs 134. The next memory field stores the format of the discount quantity data, with "1" signifying cents and "2" signifying percentage in tenths of a percent. The next memory field stores the discount quantity data, 200, signifying that the discount being offered for Lighthouse Light Bulbs 134 is \$2.00. The next memory field having the product code 7170312780 corresponds to the UPC code on ammonia bottles 112. The next memory field stores the format of the discount quantity data, with "1" signifying cents and "2" signifying percentage in tenths of a percent. The next memory field stores the discount quantity data, 50, signifying that the discount being offered for ammonia bottles 112 is 50 cents. In list 2435 in FIG. 15B, the memory field having the product code 7170312682 corresponds to the UPC code on boxes of Old World Pasta 124. The next memory field stores the format of the discount quantity data, with "1" signifying cents and "2" signifying percentage in tenths of a percent. The next memory field stores the discount quantity data, 150, signifying that the discount being offered for Old World Pasta 124 is \$1.50.

FIG. 16 shows aspects of the processing of step 9035 of FIG. 9. The processing of FIG. 16 is processing performed by CPU 950 and program 922 in checkout counter 900, when a customer checks out of store 1000. When a customer, such as customer 290, inserts customer card 190 into interface slot 914, a switch (not shown) in interface slot 914 alerts CPU 950 that a card has been inserted into the slot. When a customer card is in interface slot 914, conductive contacts (not shown) inside interface slot 914 touch each card contact 2420. Subsequently, CPU 950 causes card interface 925 to reset the card by applying a clock signal to card contact 2423. (If the card is a customer card, the card then answers the reset by sending a block of data, including identification data 2467 and authorization data 2468, through card contact 2427.) CPU 950 then receives the answer-to-reset from the card (step 16002). CPU 950 then sends a data block containing a station-type code indicating a checkout station (step 16004). CPU 950 then receives the contents of table 2435 in memory 2460 of the customer card, and temporarily stores these table contents in memory 920 of the checkout station (step 16005). During step 16005, CPU 950 also causes customer card 190 to remove all entries from list 2435, so that the electronic coupons in the list cannot be redeemed again. When the checkout clerk (not shown) moves a product past UPC reader 910, UPC reader 910 detects the UPC code on the product and sends the UPC code to CPU 750 (step 16010). CPU 950 searches the received table contents to determine whether the product scanned is identified in the table (step 16020). If the product is not in the received table, CPU 950 displays the prices (step 16040). If the product is in the received table, CPU 950 subtracts the discount, as determined by the discount data stored in the received table, from a product reference price read from disk 925 (step 16030), and displays the resulting price of the product on display 917 (step 16040). If there are products remaining (step 16042), processing proceeds to step 16010. If there are no products remaining, processing proceeds to step 16044 for display of the total price.

Product data, customer identification data 2467, authorization data 2468, and the data in list 2435 are each a type of signal.

In other words, the preferred retail system 1000 includes product areas 110, 120, 271, 140, 284, 170, 180, and 191; a plurality of customer cards each having a memory, and a checkout counter 900 having checkout station 915 acting as a communication device. A method of operating system

6,067,526

17

1000 comprises the steps of writing a first signal into memory 2460 of a card in the plurality of cards, in response to a person inserting the card into the interface slot of a PC card interface, the first signal identifying a product; reading the first signal from memory 2460, in response to a person inserting the card into the interface slot of the checkout station; receiving another signal, from UPC reader 910, identifying a product; and determining a price for the product depending on whether the product identified by the first signal, read in the reading step, corresponds to the product identified by the other signal.

In summary, after UPC barcode reader 910 scans a product, processor 950 determines eligibility for a discount. If a product qualifies, processor 950 displays the discounted price on display 917.

FIG. 17 shows aspects of the processing of steps 9010 and 9035 of FIG. 9. The processing of FIG. 17 processing is performed by one of the customer cards, such as customer card 190, in the preferred retail system. After the card is reset through contacts 2420, the customer card sends an "answer to reset" data block in accordance with the ISO standard ISO/ICE 7816-3: 1989(E), cited above. The customer card sends identification data 2467 and authorization data 2468 in the answer-to-reset data block (step 17010). If the station then sends a block of data to the customer card, the customer card then receives the block of data through contact 2427 (step 17015). If the block contains a station-type code indicating a PC card interface (step 17020), the customer card then adds product coupon information, from a certain location in the block, to the list 2345 (step 17030).

If the customer card is not eligible, the PC interface will not send a block of data, step 17015 therefore does not execute, and processing ceases until the customer card is reinserted into an interface slot, at which time the station will reset the card and processing will restart at step 17010.

Alternatively, if the block contains a station-type code indicating a Checkout station (step 17070), the customer card then sends list 2345 to the display station (step 17080). In other words, CPU 2450 reads list 2435 from memory 2460, in response to a customer inserting card 190 into checkout station 915, and sends a signal corresponding to the list 2345 to the checkout station (step 17080). If the block does not contain a station-type code indicating a Checkout station, there is no additional processing.

FIG. 18 shows a block diagram of a preferred retail system including a clearinghouse 990, and a plurality of checkout stations 900. Periodically, checkout counter 900 sends redemption data to an electronic clearing house. The redemption data sent to the clearing house includes the identification of the store, identification of the coupons redeemed and of respective quantities of coupon redemptions. Periodically, checkout counter 900 sends redemption data to a market research center. The redemption data sent to the research center includes the identification of the store and of the customers who presented electronic coupons for redemption. The checkout stations send the redemption data blocks, over telephone signal paths 714.

Checkout stations 903 are located within a single company. Checkout stations 903 are similar to checkout stations 900, described above, except that checkout stations 903 have circuitry for communicating over network 912. Checkout stations 903 send transaction data blocks to central financial computer 911 located within the company. Central financial computer 911 periodically sends the compiled transaction data to clearing house 990, over telephone signal paths 714.

Thus, the preferred systems provides a convenient and stimulating shopping environment. The systems allow the

18

user to receive electronic coupons at home and then bring the received coupons to a retail store.

Other applications of electronic coupons are the subject of copending application of KEN R. POWELL for RETAIL SYSTEM, Ser. No. 08/468,816, filed on Jun. 6, 1995, the contents of which is herein incorporated by reference; and of application of KEN R. POWELL for DEVICE AND METHOD OF PROGRAMMING A RETAIL SYSTEM, Ser. No. 08/468,820, filed on Jun. 6, 1995, now U.S. Pat. No. 5,727,153 issued Mar. 10, 1998 for RETAIL STORE HAVING A SYSTEM OF RECEIVING ELECTRONIC COUPON INFORMATION FROM A PORTABLE CARD AND SENDING THE RECEIVED COUPON INFORMATION TO OTHER PORTABLE CARDS, the contents of which is herein incorporated by reference.

Additional advantages and modifications will readily occur to those skilled in the art. The invention in its broader aspects is therefore not limited to the specific details, representative apparatus, and illustrative examples shown and described. Accordingly, departures may be made from such details without departing from the spirit or the scope of Applicants' general inventive concept. The invention is defined in the following claims.

What is claimed is:

1. A system comprising:

a plurality of portable cards;

a first computer network including a first plurality of computers, each having a respective first network address, the plurality of first computers including a first computer having means for sending a first signal including a first network address, an inter-network address corresponding to a computer on another network, and a signal corresponding to a product;

a second computer network including a second plurality of computers, each having a respective second network address;

means, responsive to the inter-network address from the first signal, for sending a second signal including a second network address and the signal corresponding to the product; and

means, responsive to the signal corresponding to the product from the second signal, for sending a card signal, to a portable card in the plurality of cards; and means, spatially removed from the previous means, for reading the card signal from the portable card.

2. In a system including a plurality of portable cards, a plurality of homes, a store and a routing system for receiving a signal and generating network addresses in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links, a retail system comprising:

a first computer; and

a second computer, wherein the first computer includes circuitry for sending first signals to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to the second computer, to cause the routing system to generate a plurality of network addresses, each of the plurality of network addresses corresponding to a respective computer in a respective computer network, and wherein the second computer includes circuitry for receiving first signals, and wherein the system further includes:

a plurality first processors, each located in one of the plurality of homes, responsive to a first signal received

6,067,526

19

by the second computer, for sending a card signal to a portable card in the plurality of cards, the card signal corresponding to the product; and

a second processor, in the store, for receiving the card signal from a portable card in the plurality of cards.

3. The retail system of claim 2 wherein each first processor includes a computer spatially removed from the second computer.

4. The retail system of claim 2 wherein the store includes a receiver for receiving a purchase signal corresponding to a product; and

a determiner for determining a price for the product depending on whether the card signal, received by the second processor, corresponds to the purchase signal.

5. The retail system of claim 4 wherein the store further includes

an electromagnetic detector for generating the purchase signal.

6. The retail system of claim 4 wherein the store further includes

a bar code reader for generating the purchase signal.

7. In a system including a store, a plurality of portable cards, a plurality of homes, and a routing system for receiving a signal and generating network addresses in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links, a method comprising:

sending first signals from a first computer to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to a second computer, to cause the routing system to generate a plurality of network addresses, each of the plurality of network addresses corresponding to a respective computer in a respective computer network;

receiving first signals, and

the step, performed in one of the homes, of

sending, responsive to a first signal received in the previous step, a card signal to a portable card in the plurality of cards, the card signal corresponding to the product, and the step of

subsequently, moving the portable card to the store, and

the step, performed in the store, of

receiving the card signal from the portable card.

8. The method of claim 7 further including the steps, performed in the store, of

receiving a purchase signal corresponding to a product; and

determining a price for the product depending on whether the card signal corresponds to the purchase signal.

9. The method of claim 7 further including the steps, performed in the store, of

generating a purchase signal with an electromagnetic detector, the purchase signal corresponding to a product;

receiving the purchase signal; and

determining a price for the product depending on whether the card signal corresponds to the purchase signal.

10. The method of claim 7 further including the steps, performed in the store, of

generating a purchase signal with a bar code reader, the purchase signal corresponding to a product;

receiving a purchase signal; and

determining a price for the product depending on whether the card signal corresponds to the purchase signal.

20

11. In a system including a plurality of portable cards, a plurality of homes, a store and a routing system for receiving a signal and generating a routing signal in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links, a retail system comprising:

a first computer; and

a second computer, wherein the first computer includes circuitry for sending first signals to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to the second computer, to cause the routing system to generate a plurality of routing signals, each of the plurality of routing signals corresponding to a respective portion of a signal path between the first and second computers, and wherein the second computer includes circuitry for receiving first signals, and wherein the system further includes:

a plurality first processors, each located in one of the plurality of homes, responsive to a first signal received by the second computer, for sending a card signal to a portable card in the plurality of cards, the card signal corresponding to the product; and

a second processor, in the store, for receiving the card signal from a portable card in the plurality of cards.

12. The retail system of claim 11 wherein each first processor includes a computer spatially removed from the second computer.

13. The retail system of claim 11 wherein the store further includes

a receiver for receiving a purchase signal corresponding to a product; and

a determiner for determining a price for the product depending on whether the card signal, received by the second processor, corresponds to the purchase signal.

14. The retail system of claim 13 wherein the store further includes an electromagnetic detector for generating the purchase signal.

15. The retail system of claim 13 wherein the store further includes

a bar code reader for generating the purchase signal.

16. In a system including a store, a plurality of portable cards, a plurality of homes and a routing system for receiving a signal and generating a routing signal in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links, a method comprising:

sending first signals from a first computer to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to a second computer, to cause the routing system to generate a plurality of routing signals, each of the plurality of routing signals corresponding to a respective portion of a signal path between the first and second computers;

receiving first signals, and the step, performed in one of the homes, of

sending, responsive to a first signal received in the previous step, a card signal to a portable card in the plurality of cards, the card signal corresponding to the product, and the step of

subsequently, moving the portable card to the store, and

the step, performed in the store, of

receiving the card signal from the portable card.

17. The method of claim 16 further including the steps, performed in the store, of

6,067,526

21

receiving a purchase signal corresponding to a product;
and
determining a price for the product depending on whether
the card signal corresponds to the purchase signal.

18. The method of claim 16 further including the steps,
performed in the store, of

generating a purchase signal with an electromagnetic
detector, the purchase signal corresponding to a prod-
uct;

receiving the purchase signal; and

determining a price for the product depending on whether
the card signal corresponds to the purchase signal.

19. The method of claim 16 further including the steps,
performed in the store, of

generating a purchase signal with a bar code reader, the
purchase signal corresponding to a product;

receiving a purchase signal; and

determining a price for the product depending on whether
the card signal corresponds to the purchase signal.

20. In a system including a store, a plurality of portable
cards, a plurality of homes, and a routing system for receiv-
ing a signal and generating network addresses in response to
an inter-network address in the received signal, the routing
system including a plurality of wide area communication
links, a retail system comprising:

means for sending first signals from a first computer to the
routing system, each first signal including a signal
corresponding to a product, and an inter-network
address corresponding to a second computer, to cause
the routing system to generate a plurality of network
addresses, each of the plurality of network addresses
corresponding to a respective computer in a respective
computer network;

means for receiving first signals;

means for sending, responsive to a first signal received by
the previous means, a card signal to a portable card in
the plurality of cards, the card signal corresponding to
the product, the means for sending being located in one
of the homes; and

means for receiving the card signal from the portable card
in the store.

21. The retail system of claim 20 wherein the store
includes

means for receiving a purchase signal corresponding to a
product; and

means for determining a price for the product depending
on whether the card signal corresponds to the purchase
signal.

22. The retail system of claim 20 wherein the store
includes

means for generating a purchase signal with an electro-
magnetic detector, the purchase signal corresponding to
a product;

means for receiving the purchase signal; and

means for determining a price for the product depending
on whether the card signal corresponds to the purchase
signal.

23. The retail system of claim 20 wherein the store
includes

means for generating a purchase signal with a bar code
reader, the purchase signal corresponding to a product;

means for receiving a purchase signal; and

means for determining a price for the product depending
on whether the card signal corresponds to the purchase
signal.

22

24. In a system including a store, a plurality of portable
cards, a plurality of homes, and a routing system for receiv-
ing a signal and generating network addresses in response to
an inter-network address in the received signal, the routing
system including a plurality of wide area communication
links, a retail system comprising:

means for sending first signals from a first computer to the
routing system, each first signal including a signal
corresponding to a product, and an inter-network
address corresponding to a second computer, to cause
the routing system to generate a plurality of routing
signals, each of the plurality of routing signals corre-
sponding to a respective portion of a signal path
between the first and second computers;

means for receiving first signals;

means for sending, responsive to a first signal received by
the previous means, a card signal to a portable card in
the plurality of cards, the card signal corresponding to
the product, the means for sending being located in one
of the homes; and

means for receiving the card signal from the portable card
in the store.

25. The retail system of claim 24 wherein the store
includes

means for receiving a purchase signal corresponding to a
product; and

means for determining a price for the product depending
on whether the card signal corresponds to the purchase
signal.

26. The retail system of claim 24 wherein the store
includes

means for generating a purchase signal with an electro-
magnetic detector, the purchase signal corresponding to
a product;

means for receiving the purchase signal; and

means for determining a price for the product depending
on whether the card signal corresponds to the purchase
signal.

27. The retail system of claim 24 wherein the store
includes

means for generating a purchase signal with a bar code
reader, the purchase signal corresponding to a product;

means for receiving a purchase signal; and

means for determining a price for the product depending
on whether the card signal corresponds to the purchase
signal.

28. In a system including a first computer, a second
computer, a plurality of portable cards, a plurality of homes,
a store with a first receiver that receives signals from the
plurality of portable cards, and a routing system for receiv-
ing a signal and generating network addresses in response to
an inter-network address in the received signal, the routing
system including a plurality of wide area communication
links, a retail system comprising:

circuitry, in the first computer, that sends first signals to
the routing system, each first signal including a signal
corresponding to a product, and an inter-network
address corresponding to the second computer, to cause
the routing system to generate a plurality of network
addresses, each of the plurality of network addresses
corresponding to a respective computer in a respective
computer network, thereby enabling the second com-
puter to receive first signals; and

a plurality of home computers, each located in one of the
plurality of homes, responsive to a first signal received

6,067,526

25

43. The method of claim 40 further including the steps, performed in the store, of

generating a purchase signal with a bar code reader, the purchase signal corresponding to a product;
receiving a purchase signal; and

determining a monetary amount depending on whether the card signal corresponds to the purchase signal.

44. In a system including a plurality of portable cards, a store with a first receiver that receives signals from the plurality of portable cards, a plurality of homes, and a routing system for receiving a signal and generating network addresses in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links, a retail system comprising:

means for sending first signals from a first computer to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to a second computer, to cause the routing system to generate a plurality of network addresses, each of the plurality of network addresses corresponding to a respective computer in a respective computer network, thereby enabling the second computer to receive first signals; and

means for sending, responsive to a first signal received by the second computer, a card signal to a portable card in the plurality of cards, the card signal corresponding to the product, the means for sending being located in one of the homes.

45. The retail system of claim 44 wherein the store includes

a second receiver that receives a purchase signal corresponding to a product; and

means for determining a monetary amount depending on whether the card signal corresponds to the purchase signal.

46. The retail system of claim 44 wherein the store includes

means for generating a purchase signal with an electromagnetic detector, the purchase signal corresponding to a product;

a second receiver that receives the purchase signal; and

means for determining a monetary amount depending on whether the card signal corresponds to the purchase signal.

47. The retail system of claim 44 wherein the store includes

means for generating a purchase signal with a bar code reader, the purchase signal corresponding to a product;
a second receiver that receives a purchase signal; and

26

means for determining a monetary amount depending on whether the card signal corresponds to the purchase signal.

48. In a system including a plurality of portable cards, a store with a first receiver that receives signals from the plurality of portable cards, a plurality of homes, and a routing system for receiving a signal and generating network addresses in response to an inter-network address in the received signal, the routing system including a plurality of wide area communication links, a retail system comprising:

means for sending first signals from a first computer to the routing system, each first signal including a signal corresponding to a product, and an inter-network address corresponding to a second computer, to cause the routing system to generate a plurality of routing signals, each of the plurality of routing signals corresponding to a respective portion of a signal path between the first and second computers, thereby enabling the second computer to receive first signals; and

means for sending, responsive to a first signal received by the second computer, a card signal to a portable card in the plurality of cards, the card signal corresponding to the product, the means for sending being located in one of the homes.

49. The retail system of claim 48 wherein the store includes

a second receiver that receives a purchase signal corresponding to a product; and

means for determining a monetary amount depending on whether the card signal corresponds to the purchase signal.

50. The retail system of claim 48 wherein the store includes

means for generating a purchase signal with an electromagnetic detector, the purchase signal corresponding to a product;

a second receiver that receives the purchase signal; and

means for determining a monetary amount depending on whether the card signal corresponds to the purchase signal.

51. The retail system of claim 48 wherein the store includes

means for generating a purchase signal with a bar code reader, the purchase signal corresponding to a product;
a second receiver that receives a purchase signal; and
means for determining a monetary amount depending on whether the card signal corresponds to the purchase signal.

* * * * *



EXHIBIT / ATTACHMENT

C

(To be scanned in place of tab)

U.S. Patent

Mar. 30, 1999

Sheet 2 of 34

5,890,135

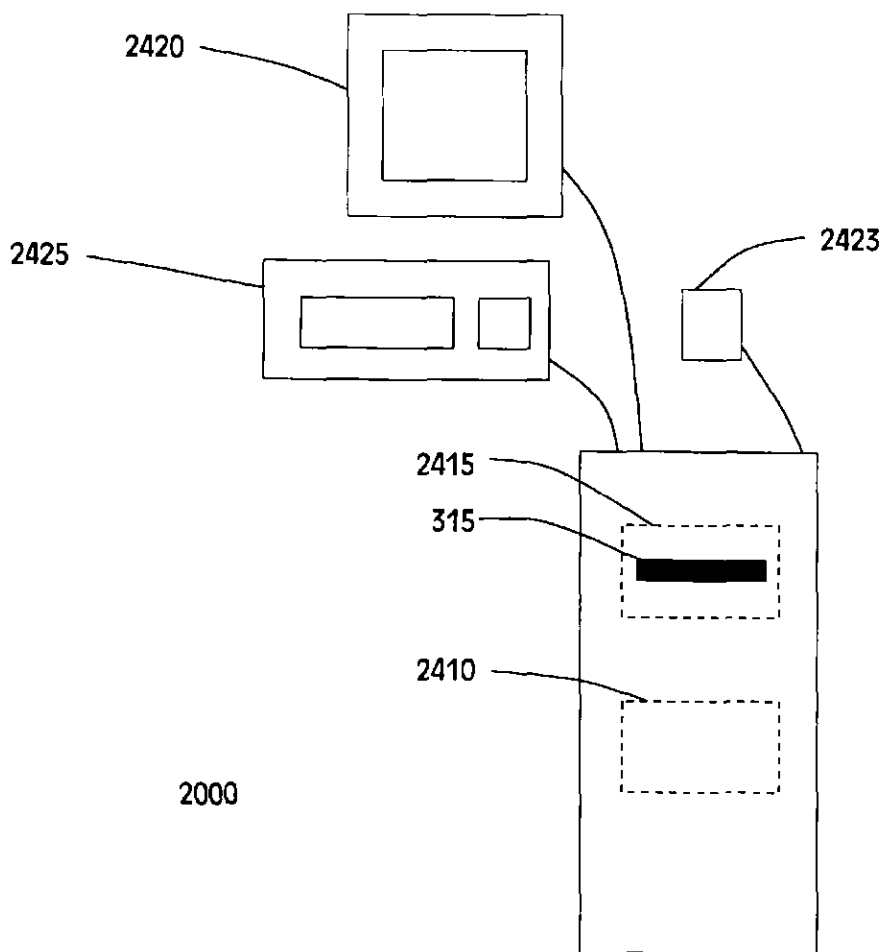


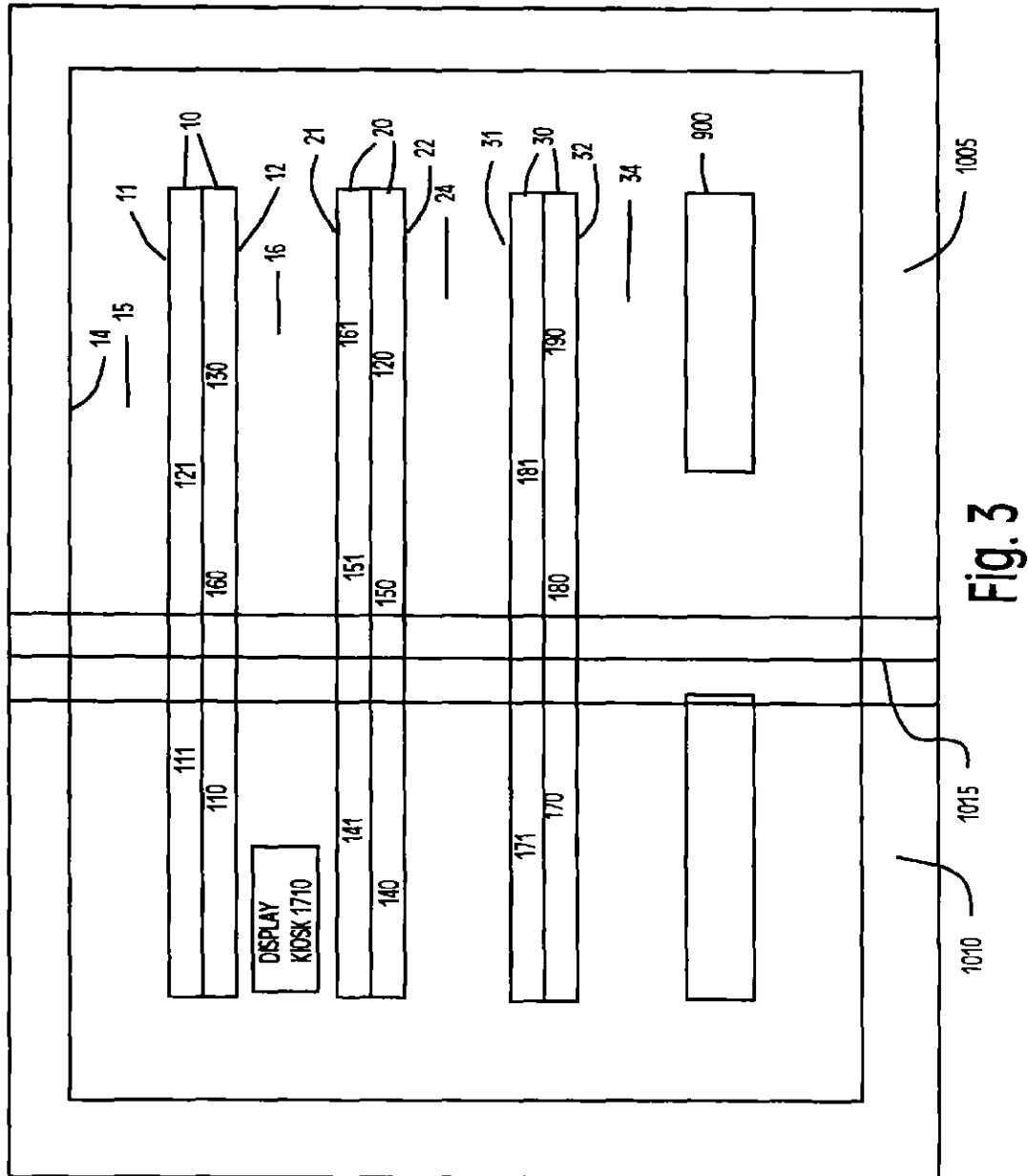
Fig. 2

U.S. Patent

Mar. 30, 1999

Sheet 3 of 34

5,890,135



U.S. Patent

Mar. 30, 1999

Sheet 4 of 34

5,890,135

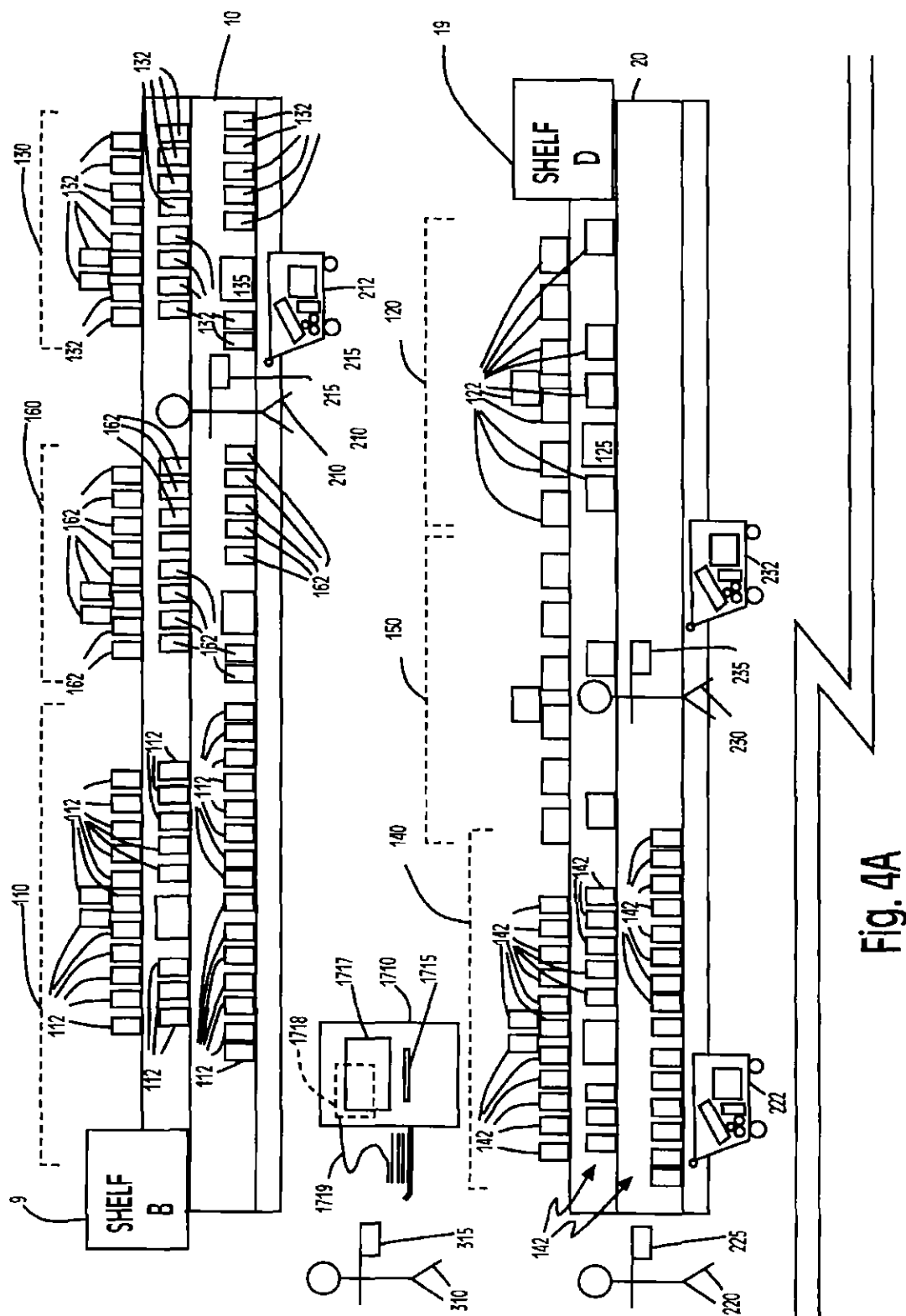


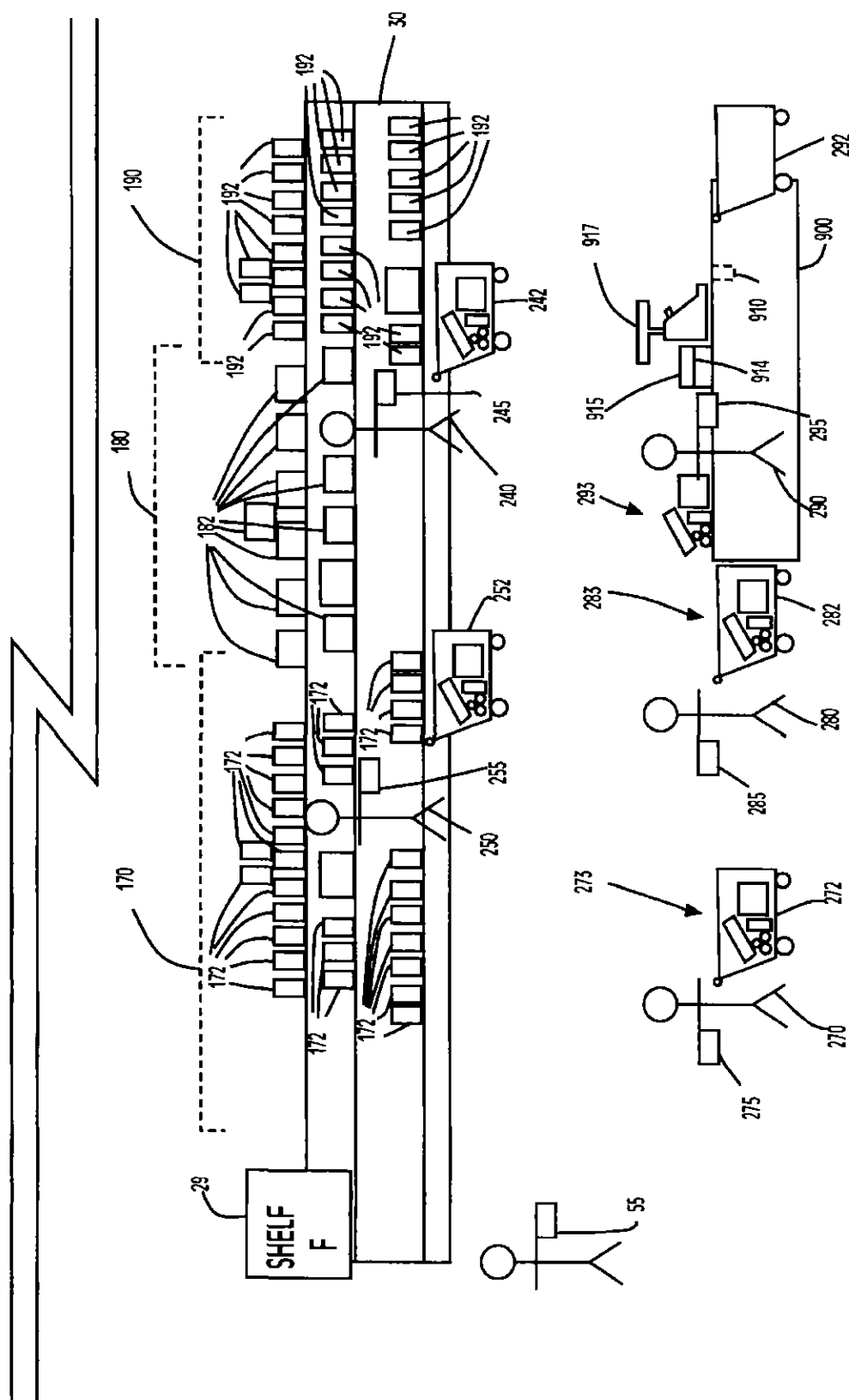
Fig. 4A

U.S. Patent

Mar. 30, 1999

Sheet 5 of 34

5,890,135



U.S. Patent

Mar. 30, 1999

Sheet 6 of 34

5,890,135

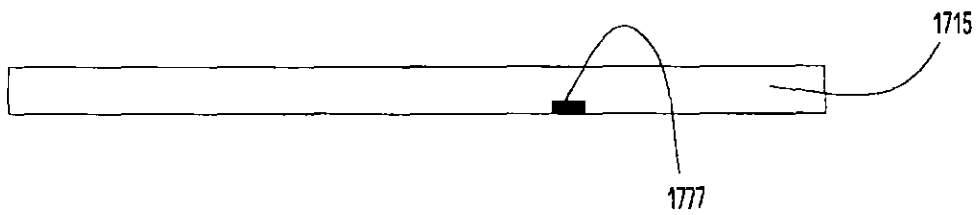


Fig. 5

U.S. Patent

Mar. 30, 1999

Sheet 7 of 34

5,890,135

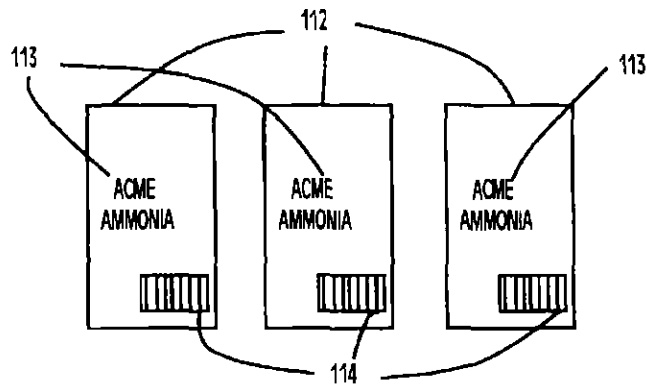


Fig. 6A

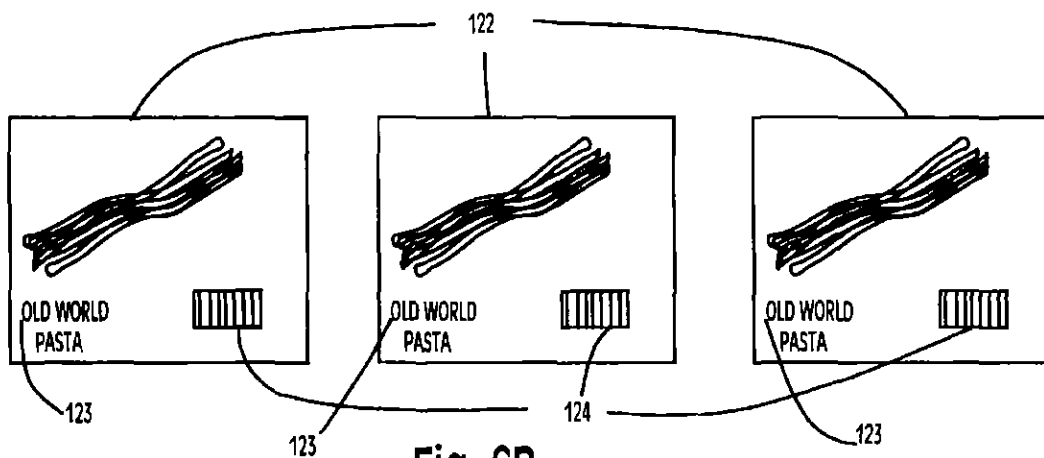


Fig. 6B

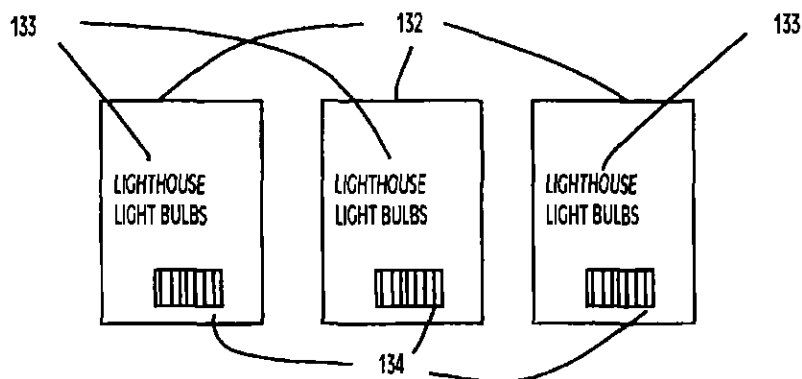


Fig. 6C

U.S. Patent

Mar. 30, 1999

Sheet 8 of 34

5,890,135

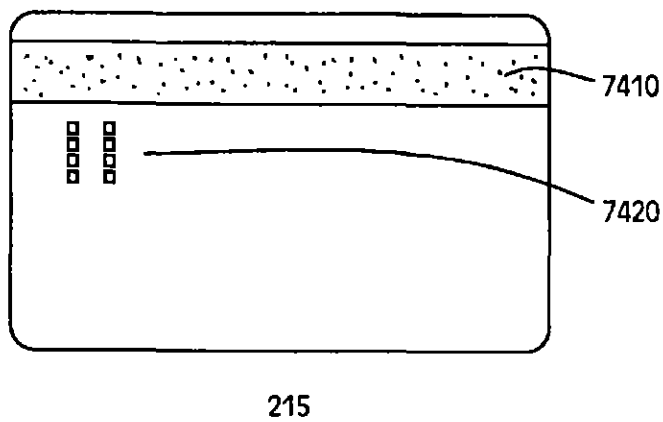


Fig. 7A

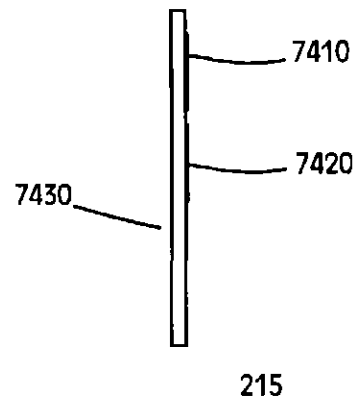


Fig. 7B

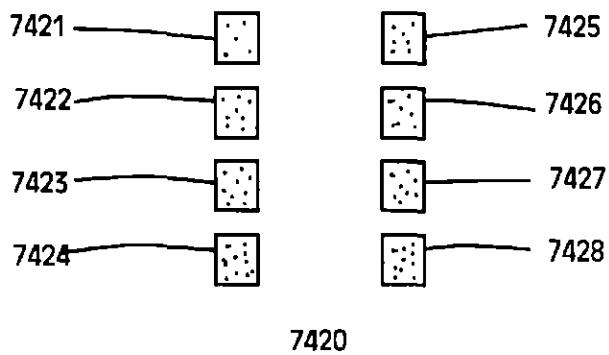


Fig. 7C

U.S. Patent

Mar. 30, 1999

Sheet 9 of 34

5,890,135

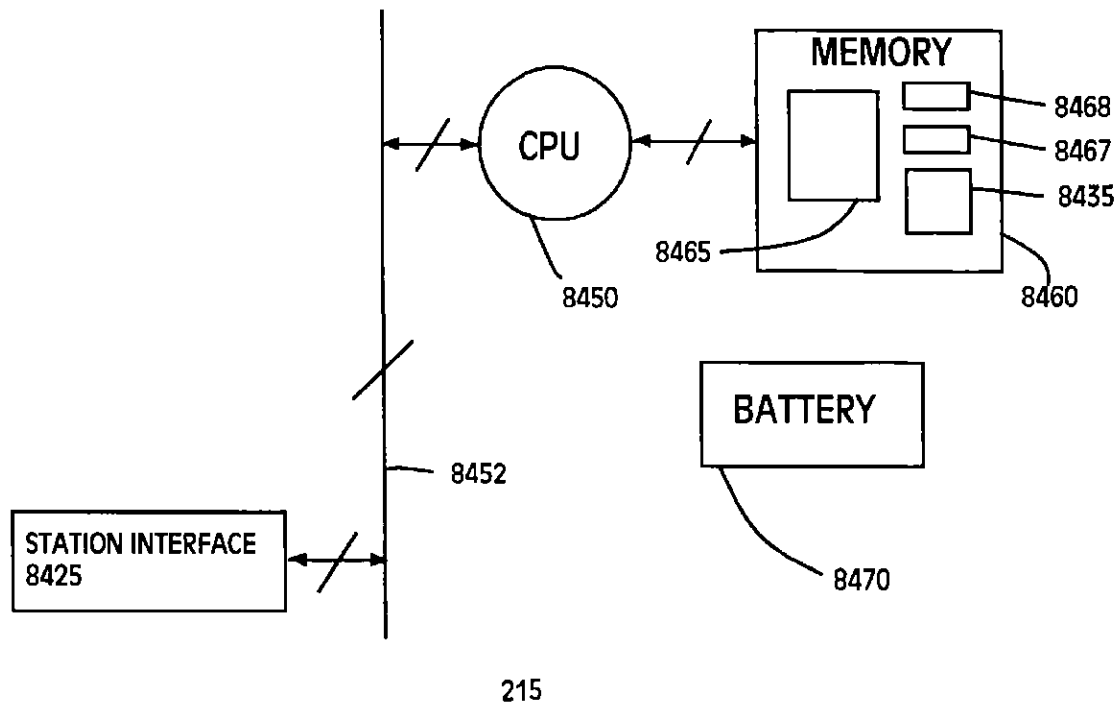


Fig. 8

U.S. Patent

Mar. 30, 1999

Sheet 10 of 34

5,890,135

30: 7170312682
1
150
7170312350
1
200
7170312780
1
50

8435

Fig. 9

U.S. Patent

Mar. 30, 1999

Sheet 11 of 34

5,890,135

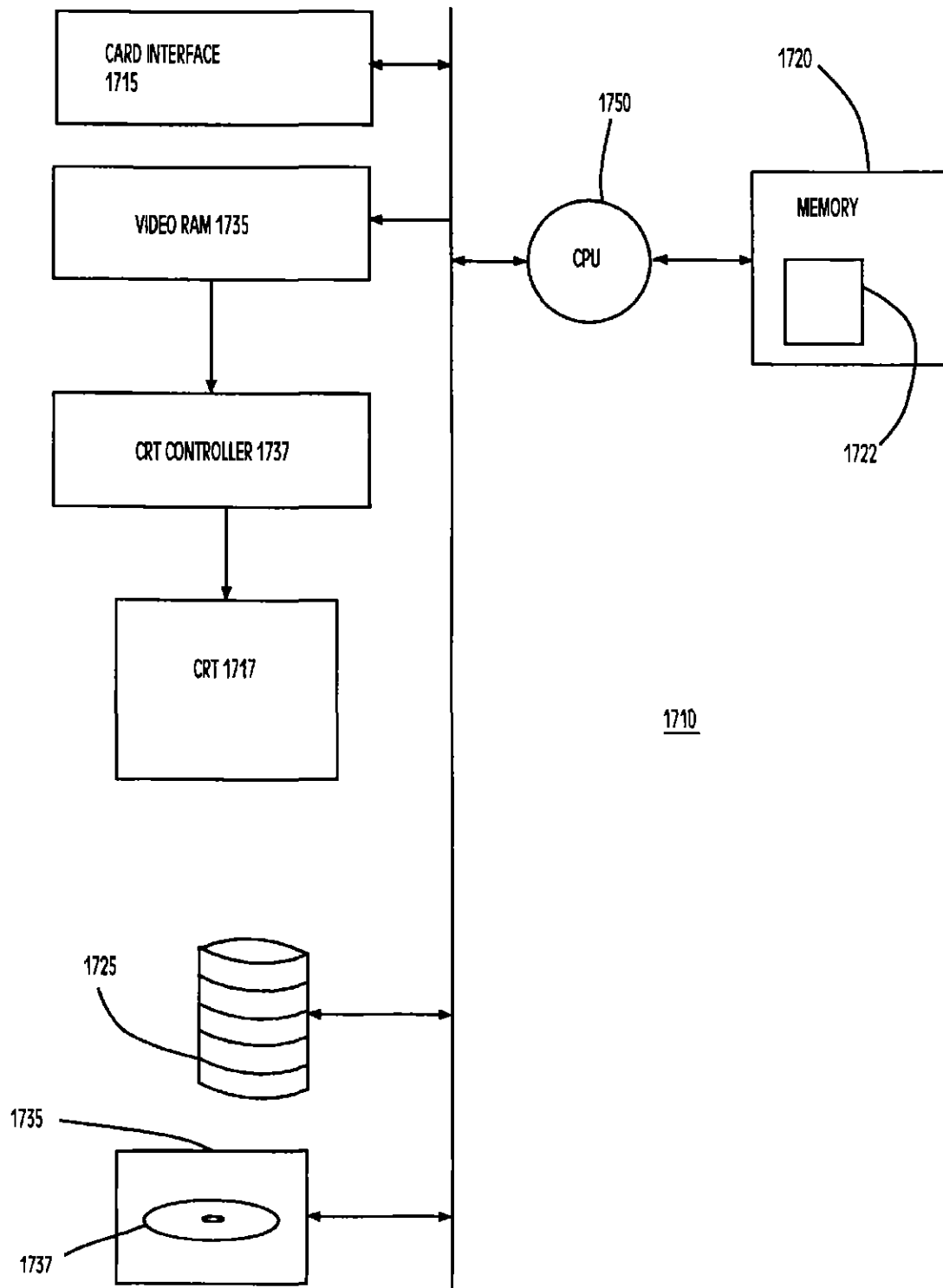


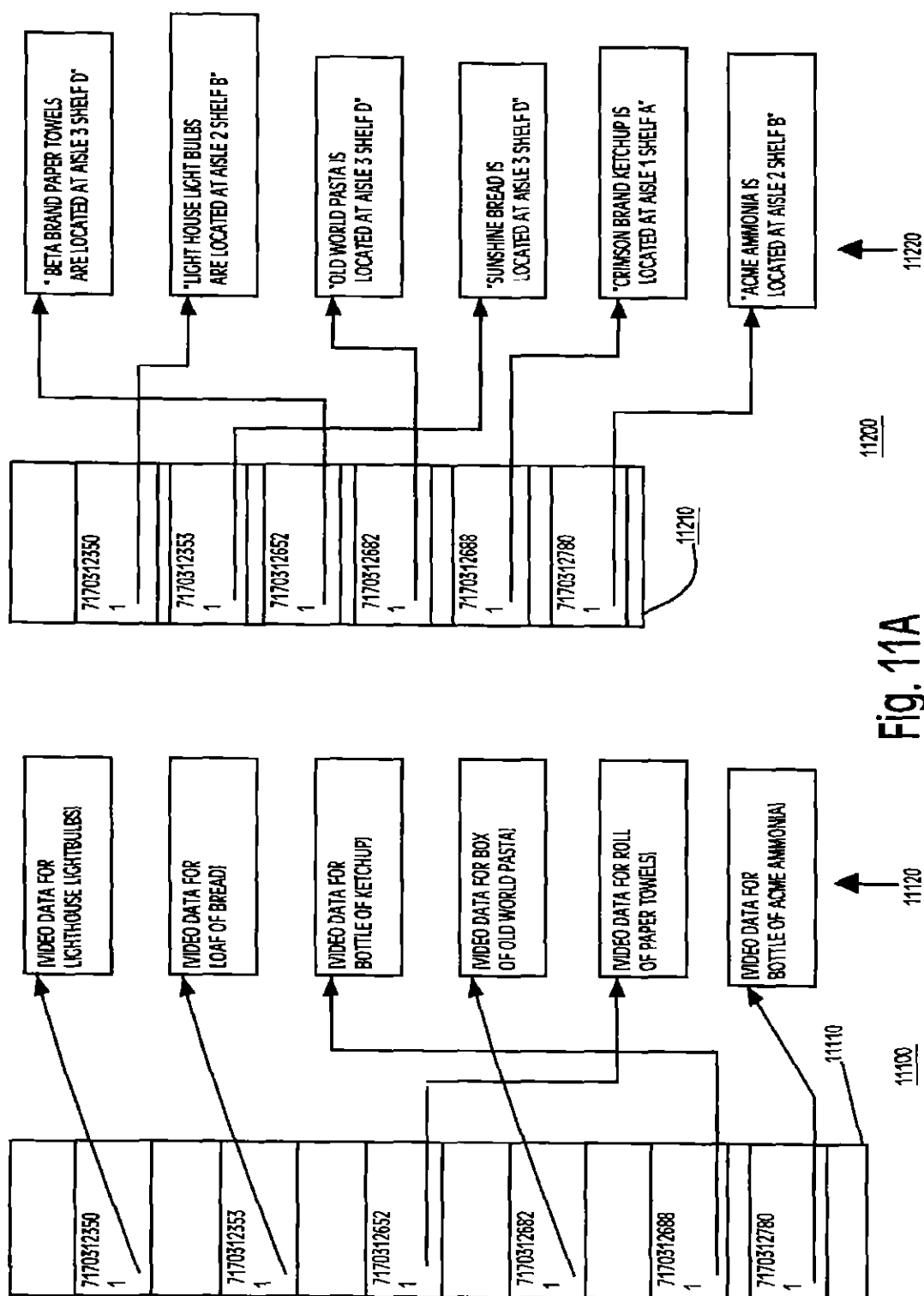
Fig. 10

U.S. Patent

Mar. 30, 1999

Sheet 12 of 34

5,890,135

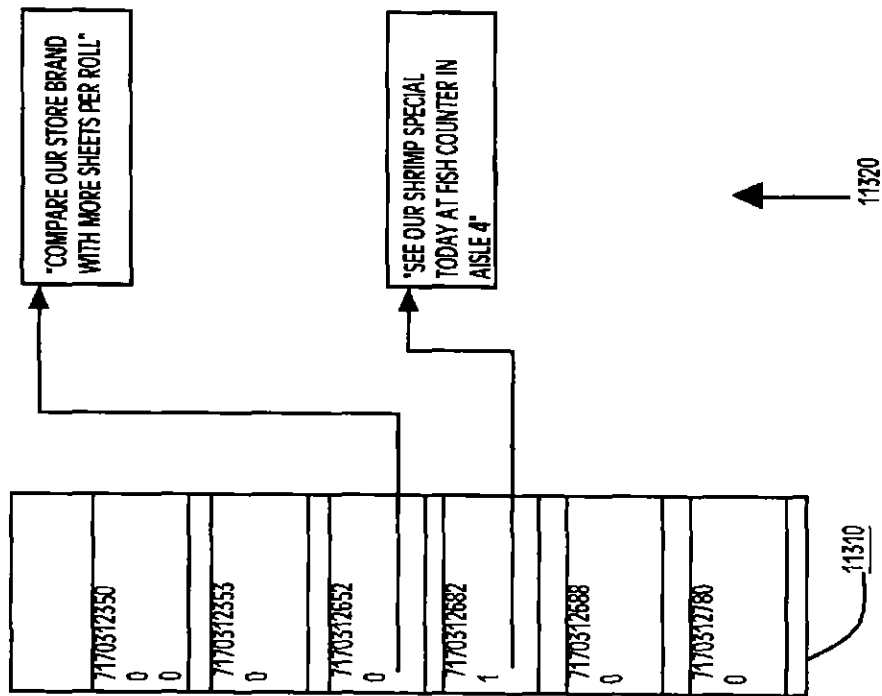


U.S. Patent

Mar. 30, 1999

Sheet 13 of 34

5,890,135



11300

Fig. 11B

U.S. Patent

Mar. 30, 1999

Sheet 14 of 34

5,890,135

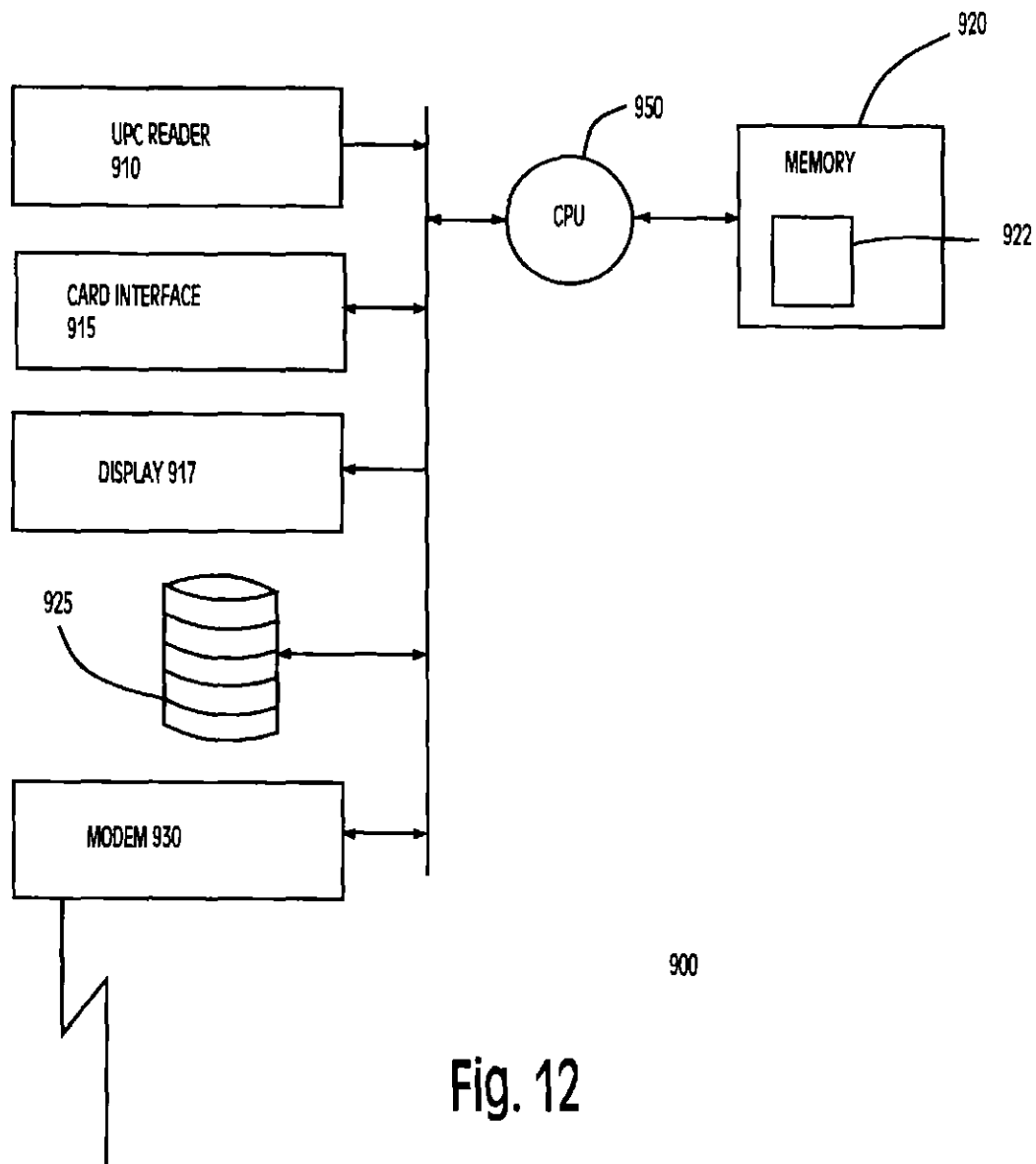


Fig. 12

U.S. Patent

Mar. 30, 1999

Sheet 15 of 34

5,890,135

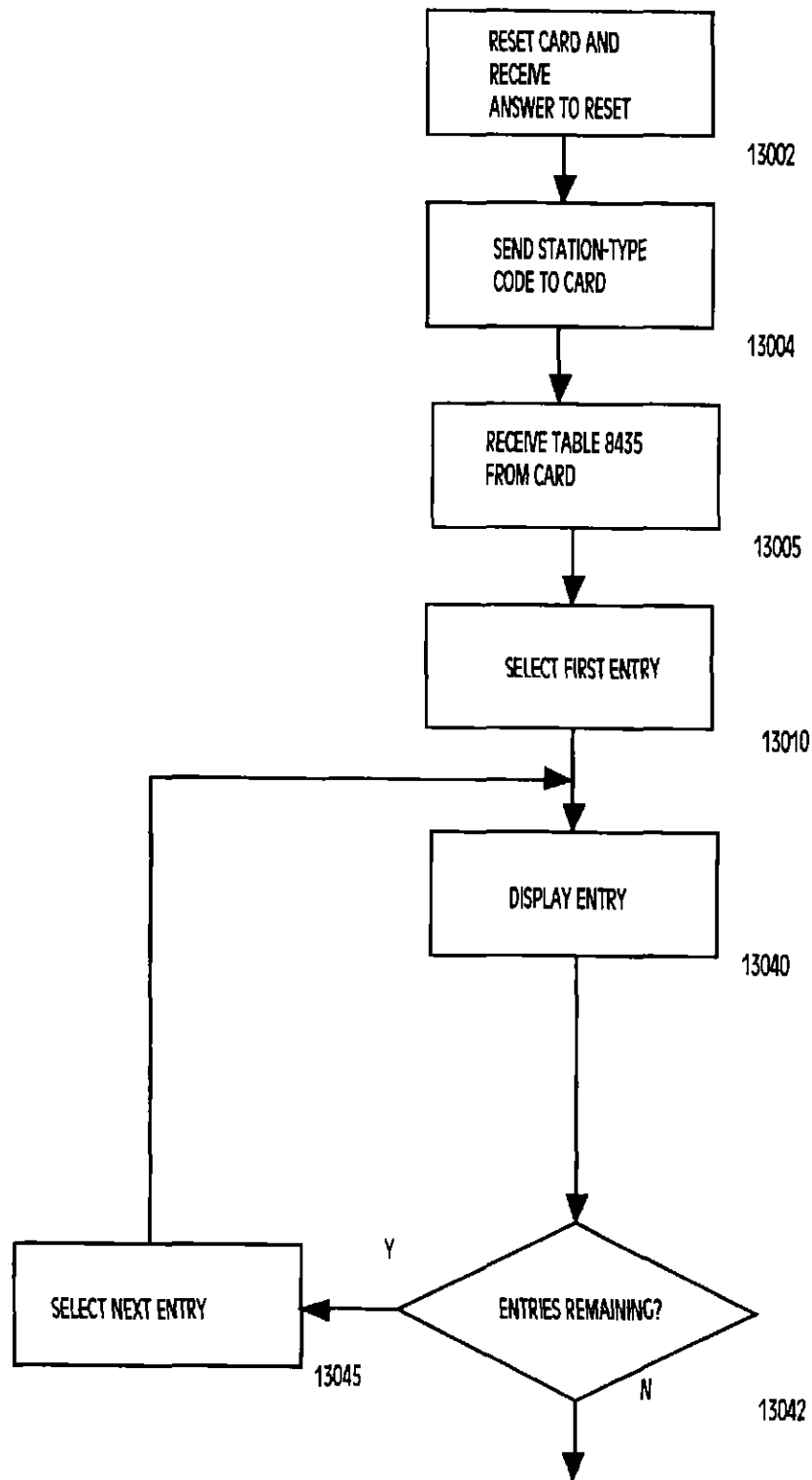


Fig. 13

U.S. Patent

Mar. 30, 1999

Sheet 16 of 34

5,890,135

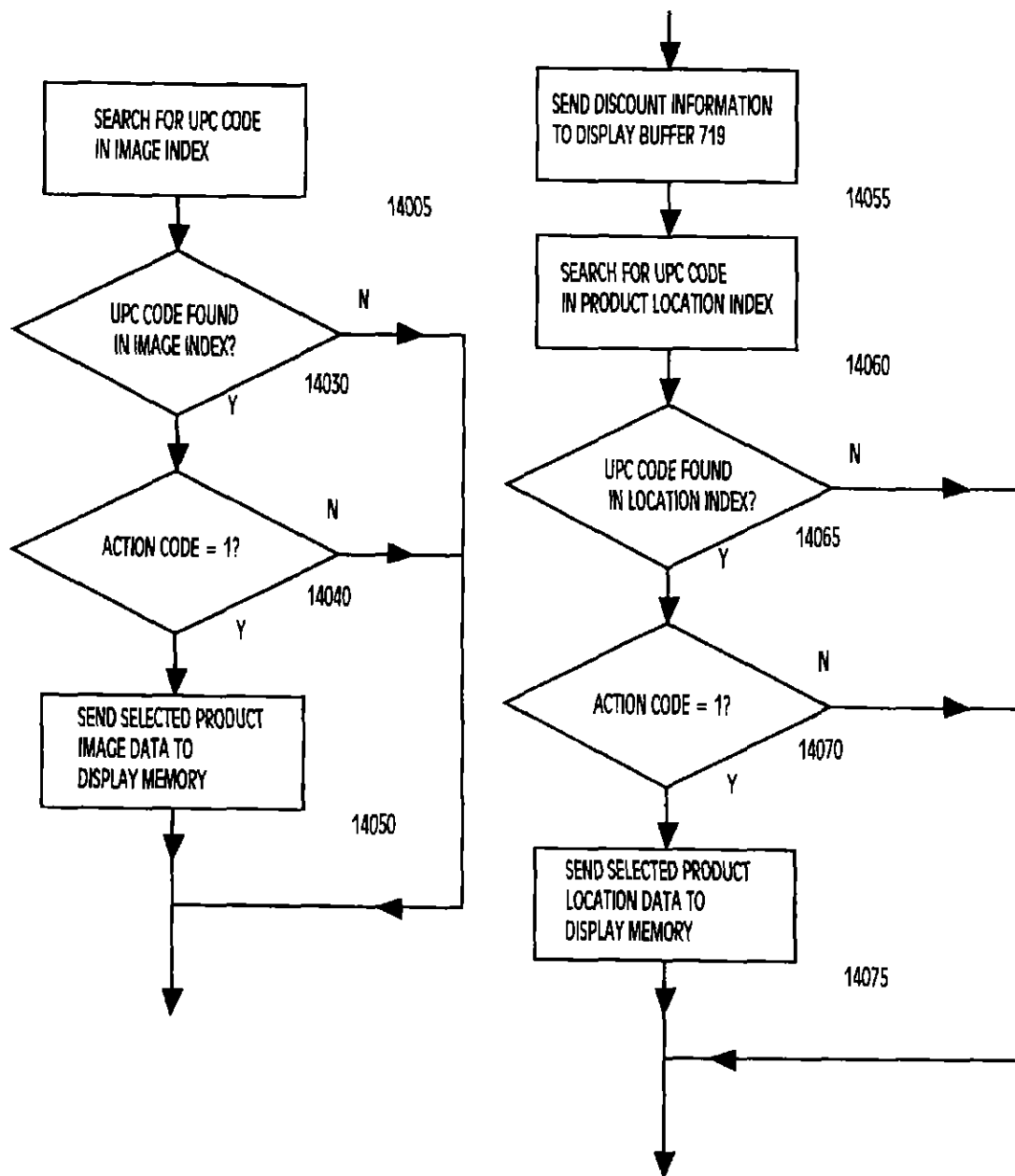


Fig. 14A

U.S. Patent

Mar. 30, 1999

Sheet 17 of 34

5,890,135

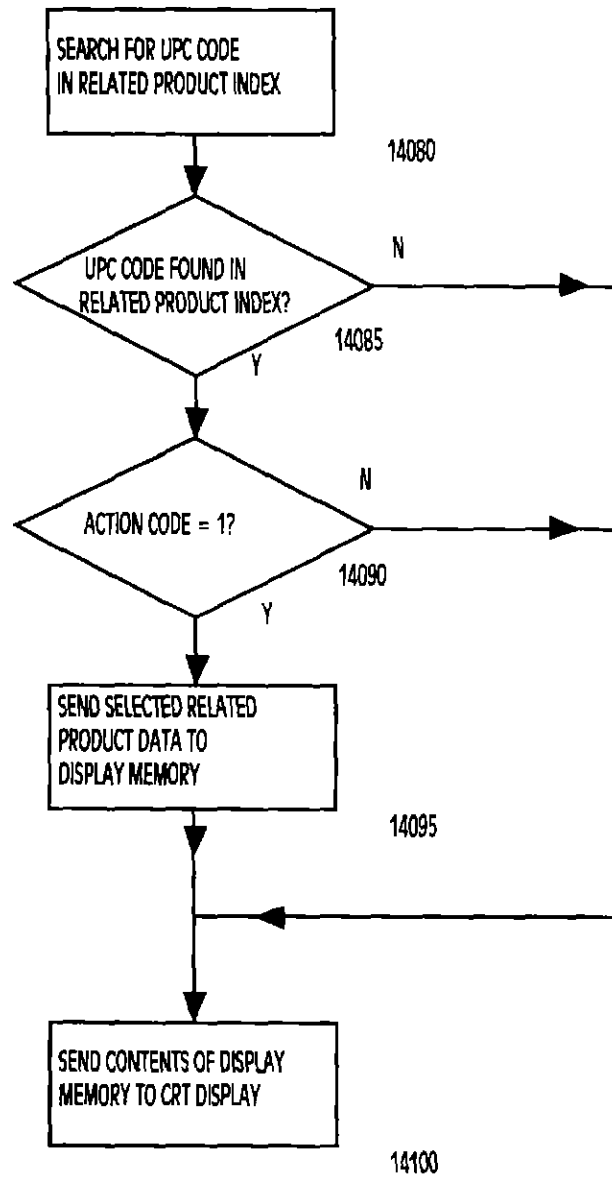


Fig. 14B

U.S. Patent

Mar. 30, 1999

Sheet 18 of 34

5,890,135

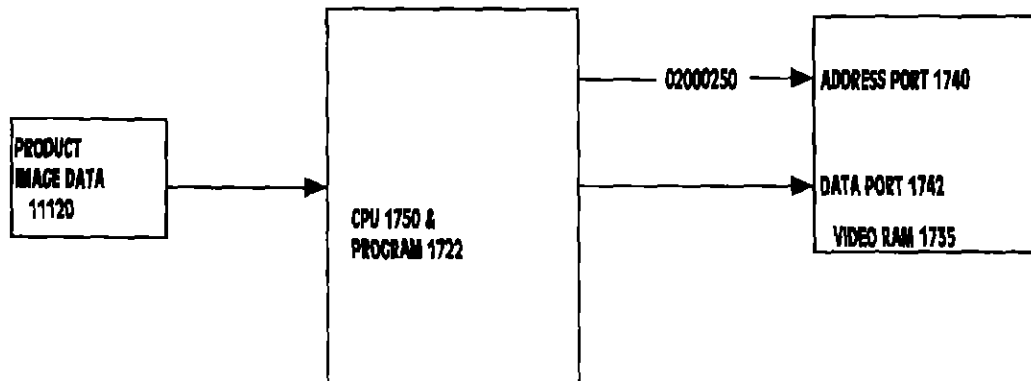


Fig. 15A

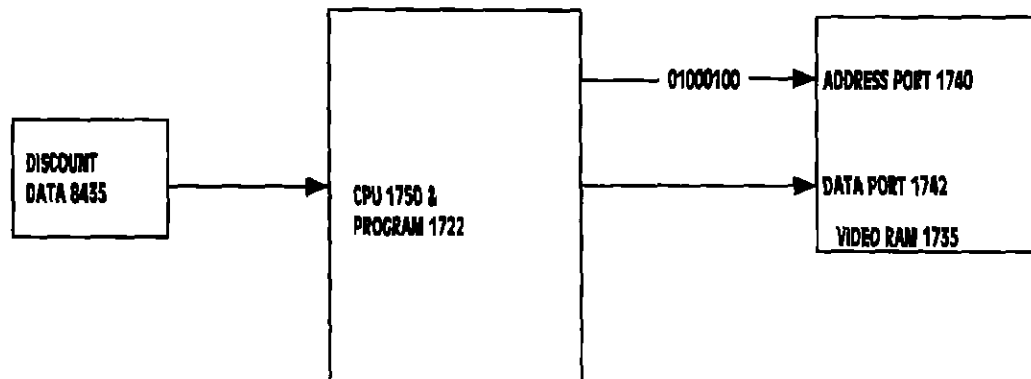


Fig. 15B

U.S. Patent

Mar. 30, 1999

Sheet 19 of 34

5,890,135

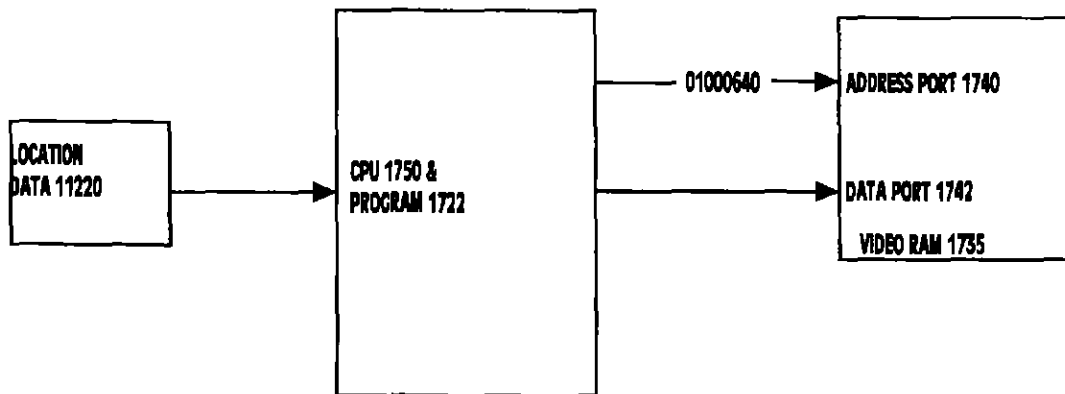


Fig. 15C

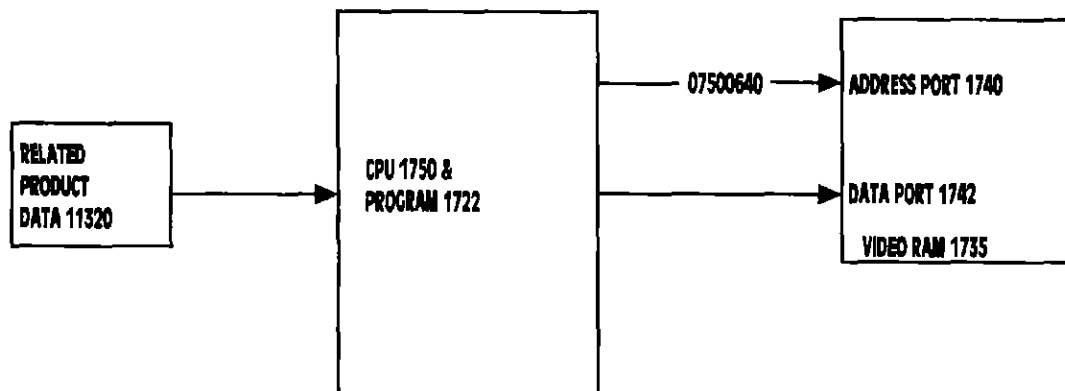


Fig. 15D

U.S. Patent

Mar. 30, 1999

Sheet 20 of 34

5,890,135

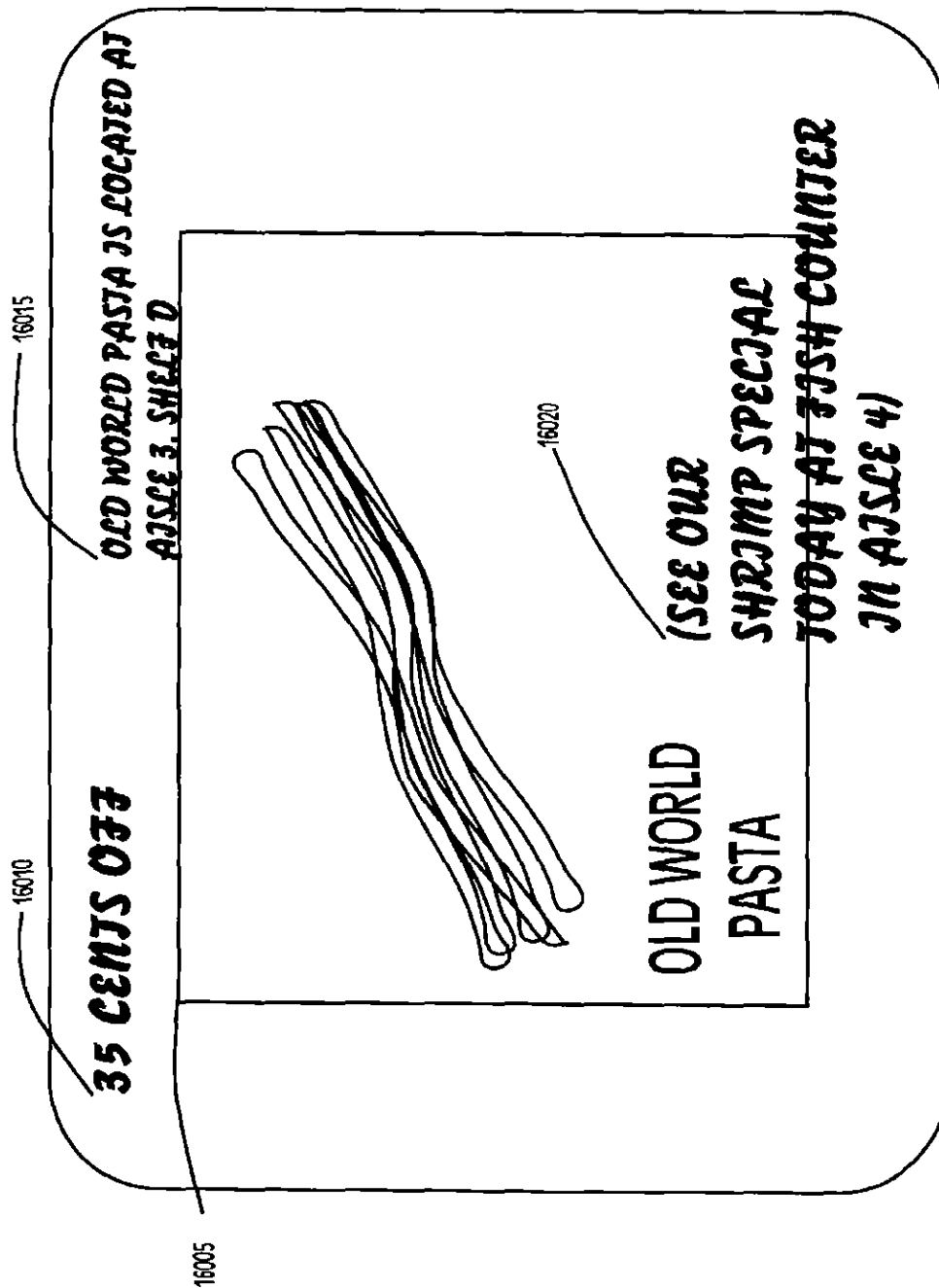


Fig. 16

U.S. Patent

Mar. 30, 1999

Sheet 21 of 34

5,890,135

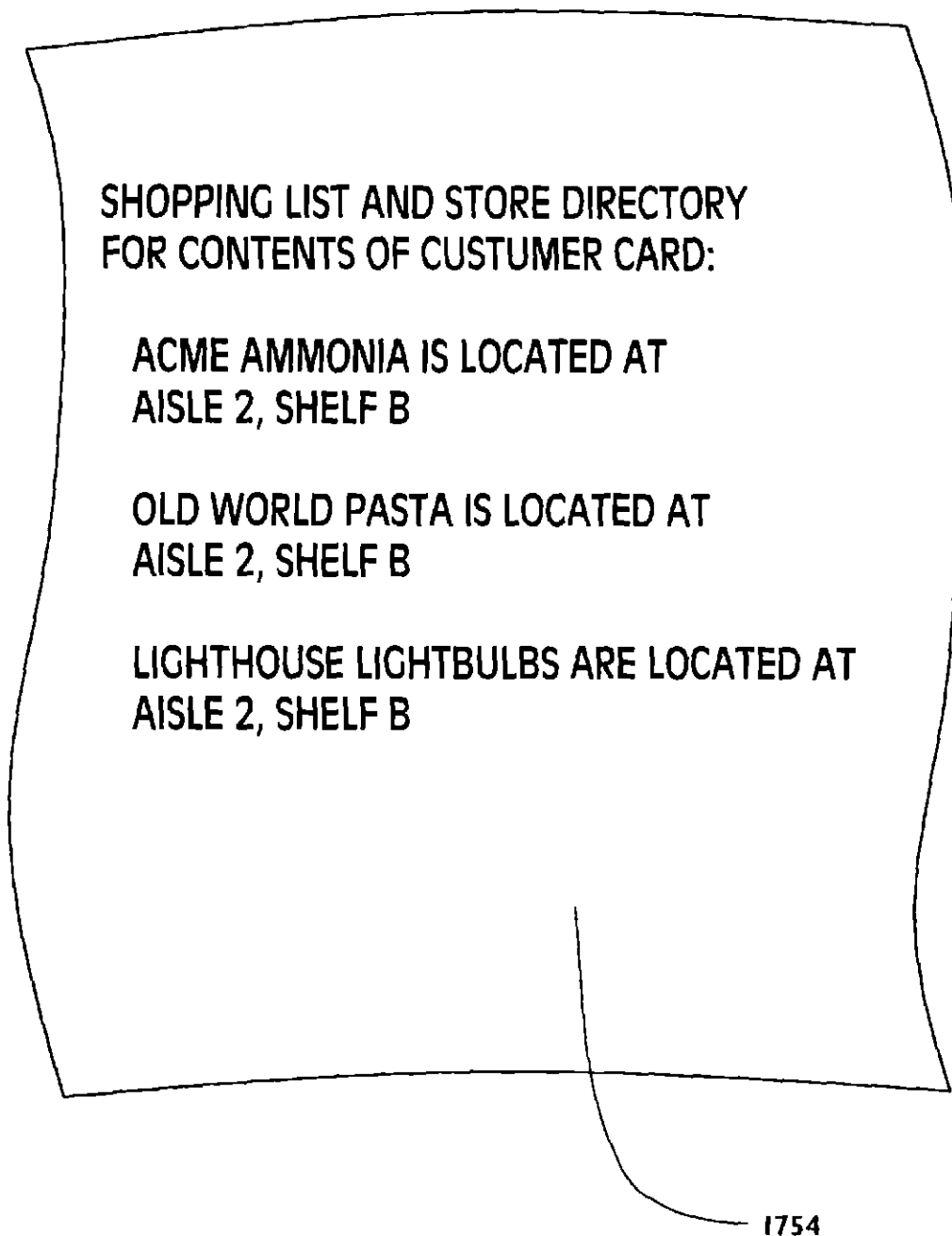


Fig. 17

U.S. Patent

Mar. 30, 1999

Sheet 22 of 34

5,890,135

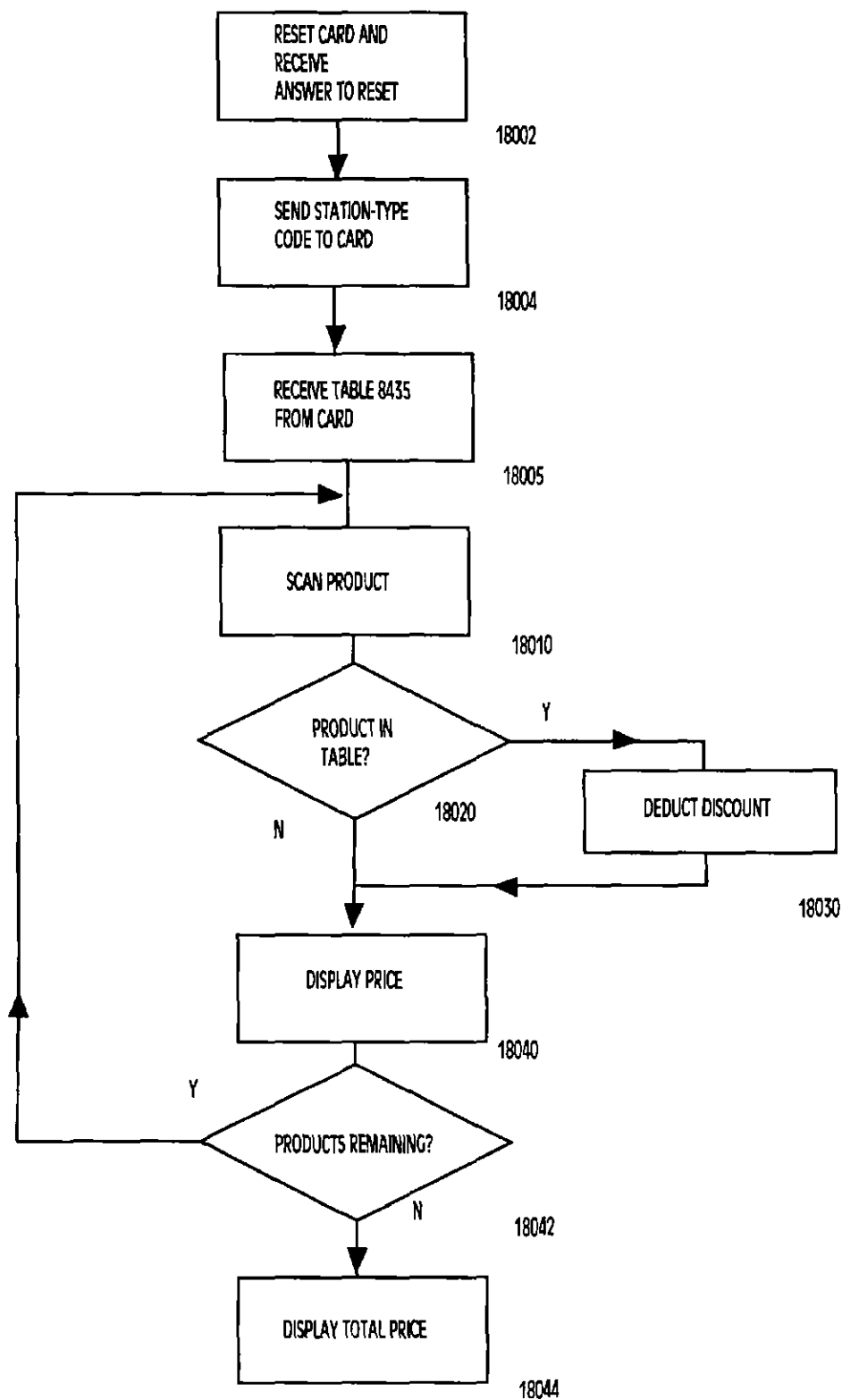


Fig. 18

U.S. Patent

Mar. 30, 1999

Sheet 23 of 34

5,890,135

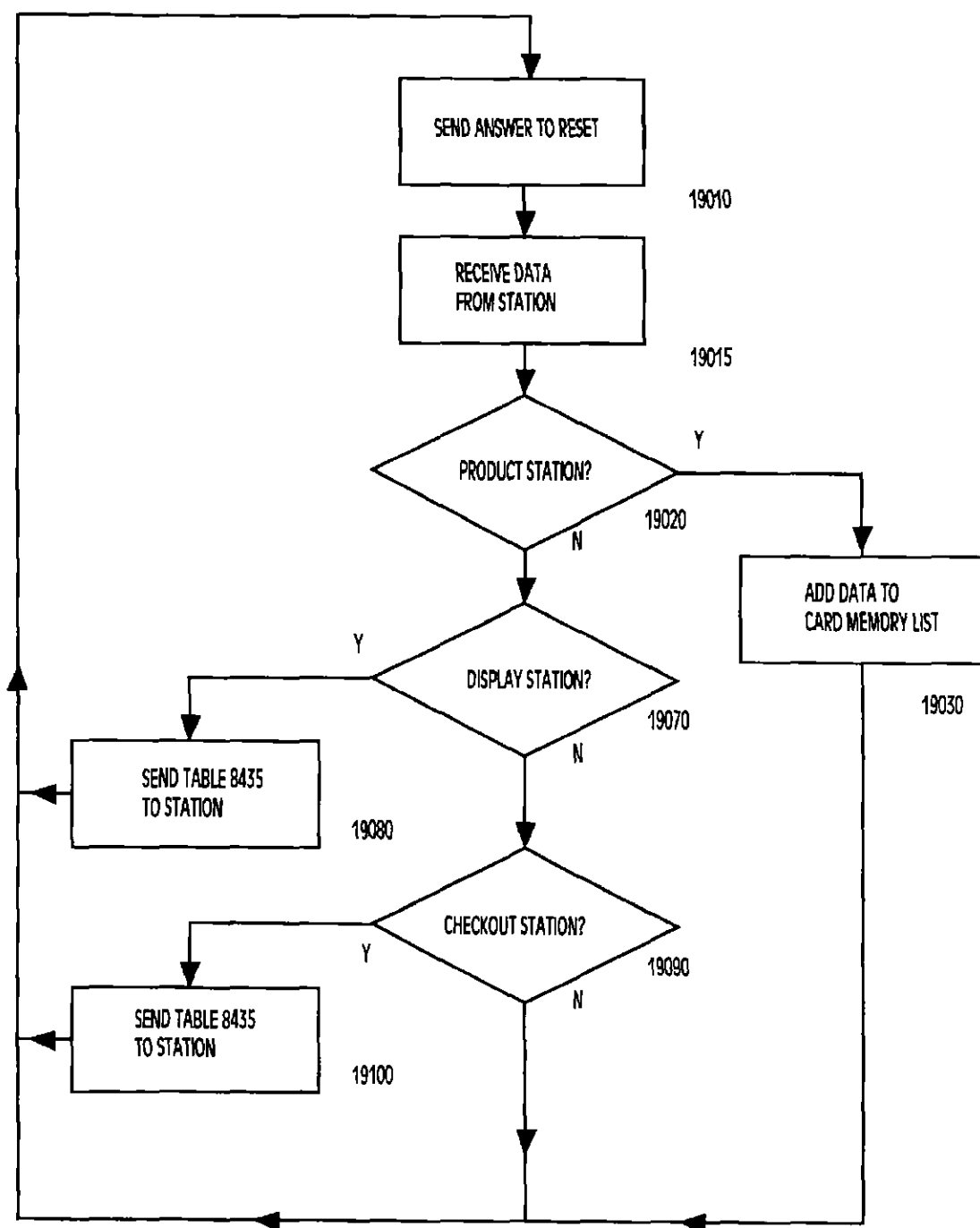


Fig. 19

U.S. Patent

Mar. 30, 1999

Sheet 24 of 34

5,890,135

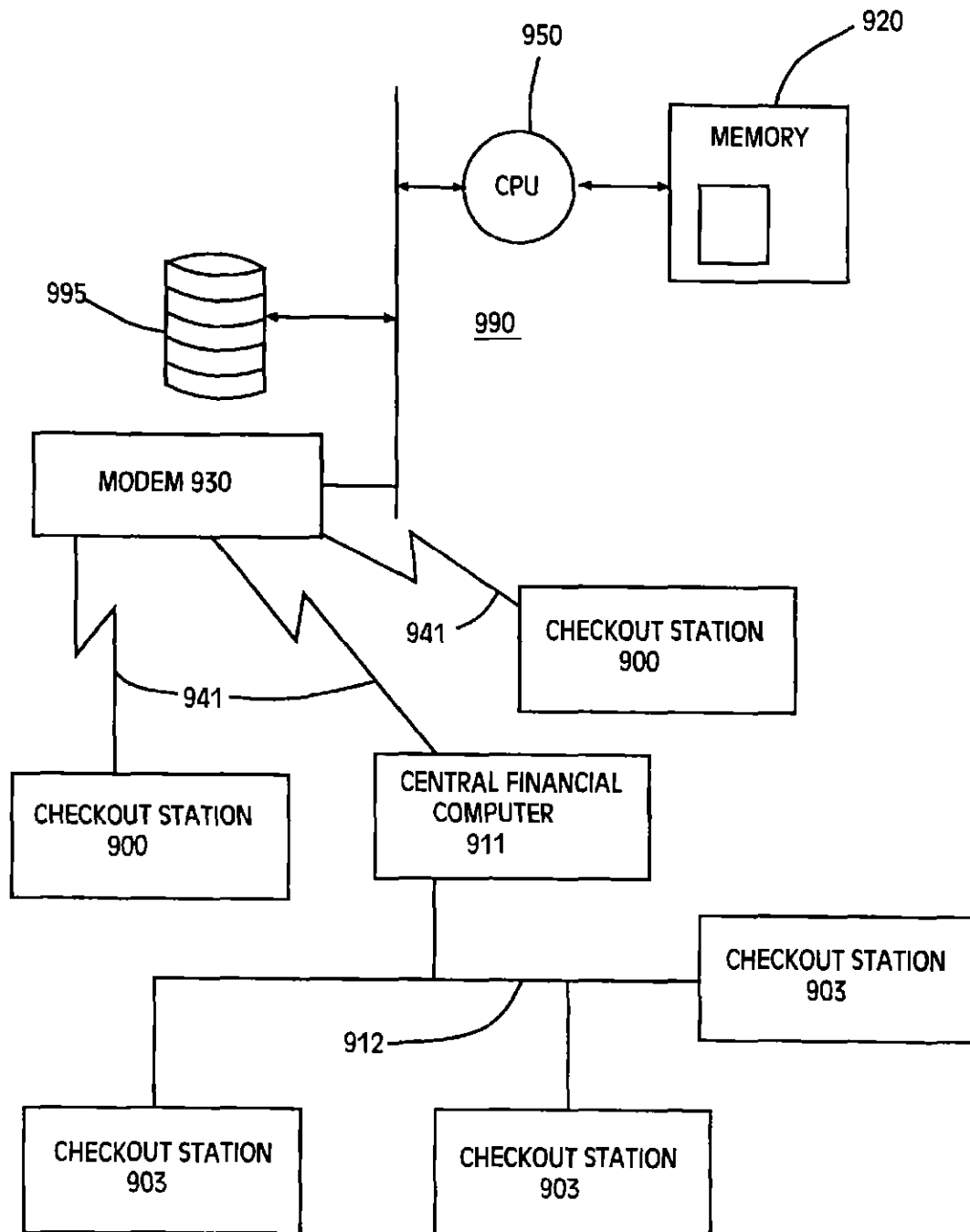


Fig. 20

U.S. Patent

Mar. 30, 1999

Sheet 25 of 34

5,890,135

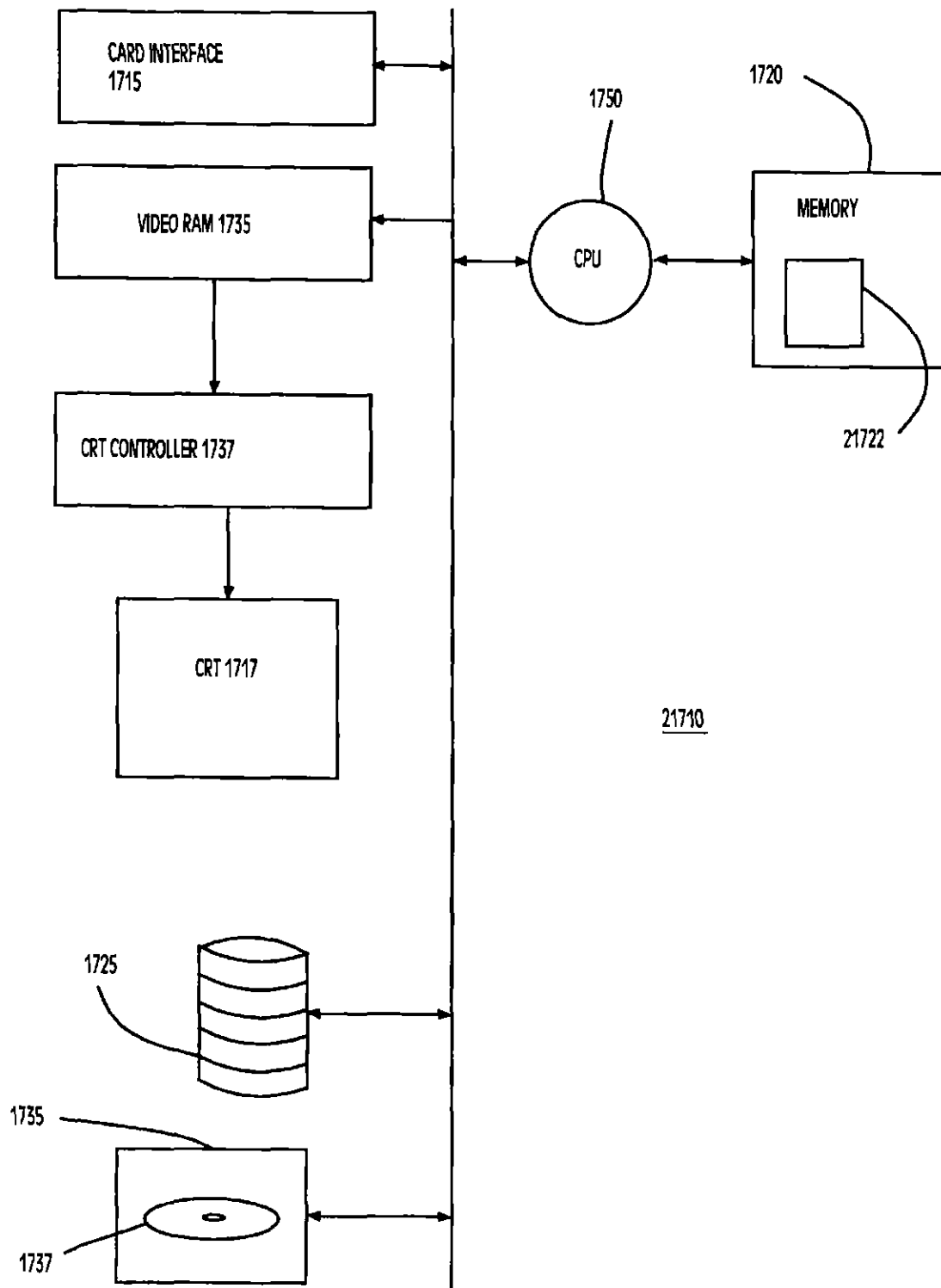


Fig. 21

U.S. Patent

Mar. 30, 1999

Sheet 26 of 34

5,890,135

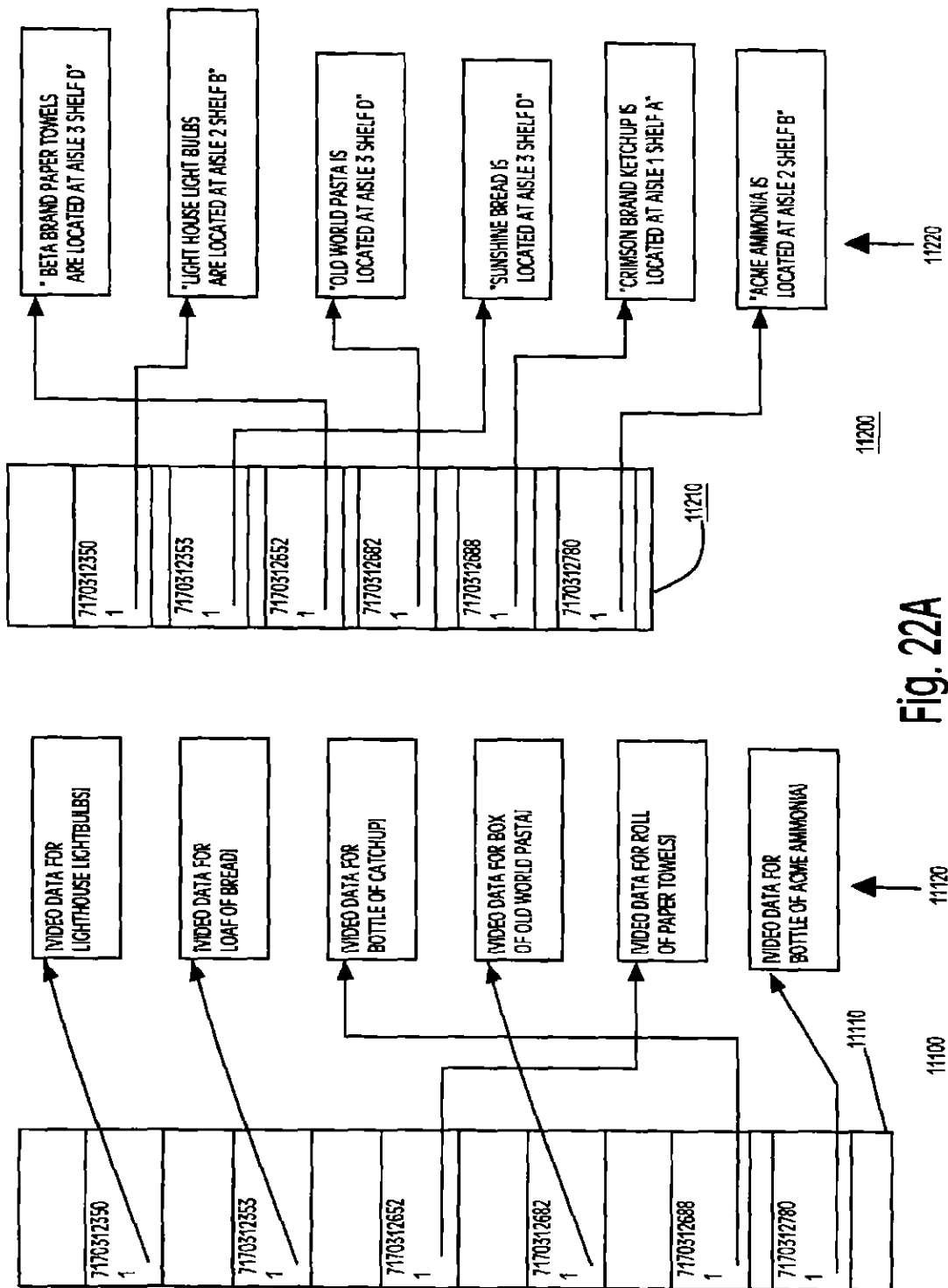


Fig. 22A

U.S. Patent

Mar. 30, 1999

Sheet 27 of 34

5,890,135

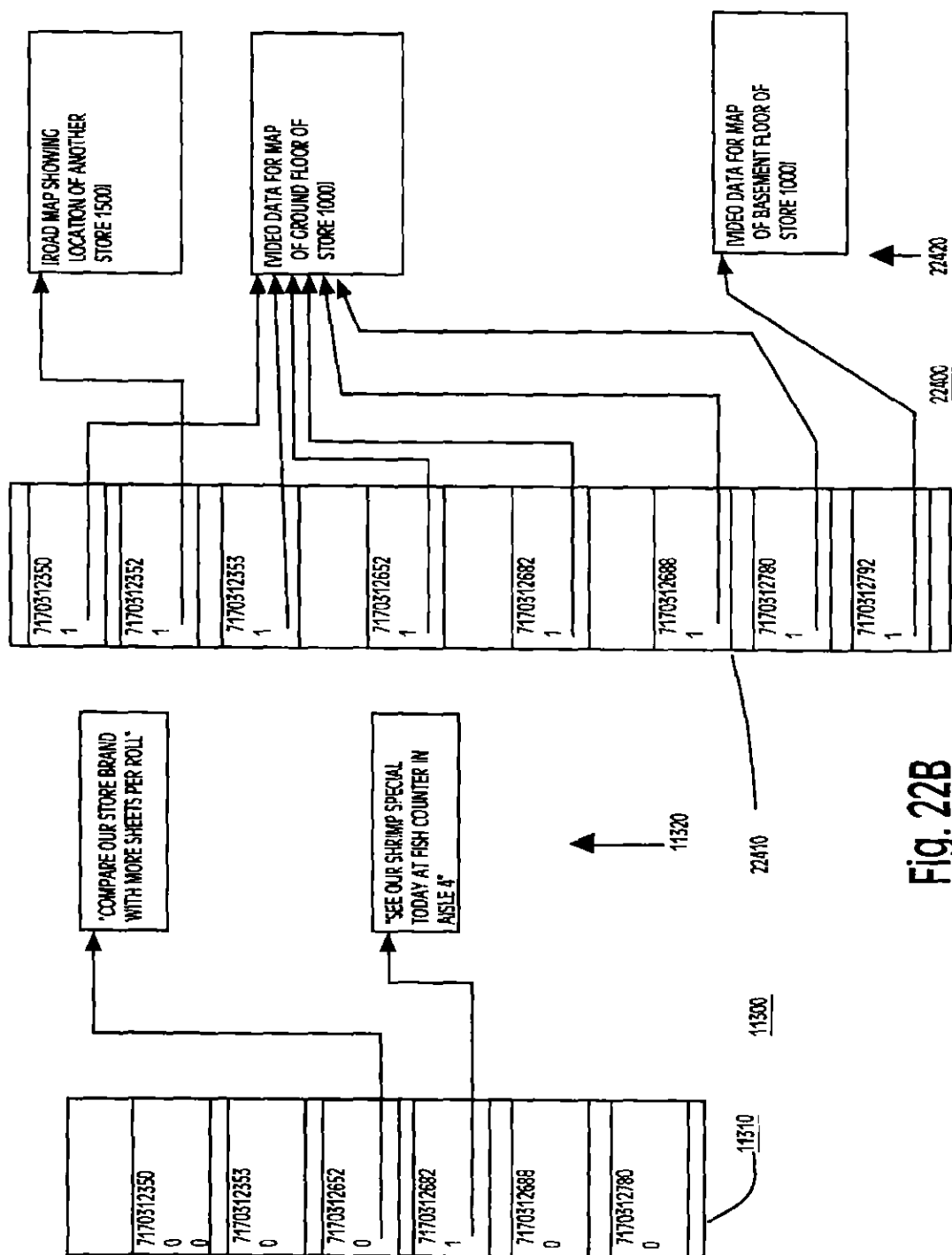


Fig. 22B

U.S. Patent**Mar. 30, 1999****Sheet 28 of 34****5,890,135**

<u>22510</u>	7170312350 1 200 950
	7170312353 1 200 640
	7170312652 1 125 800
	7170312682 1 400 950
	7170312688 1 200 400
	7170312780 1 200 200

Fig. 22C

U.S. Patent

Mar. 30, 1999

Sheet 29 of 34

5,890,135

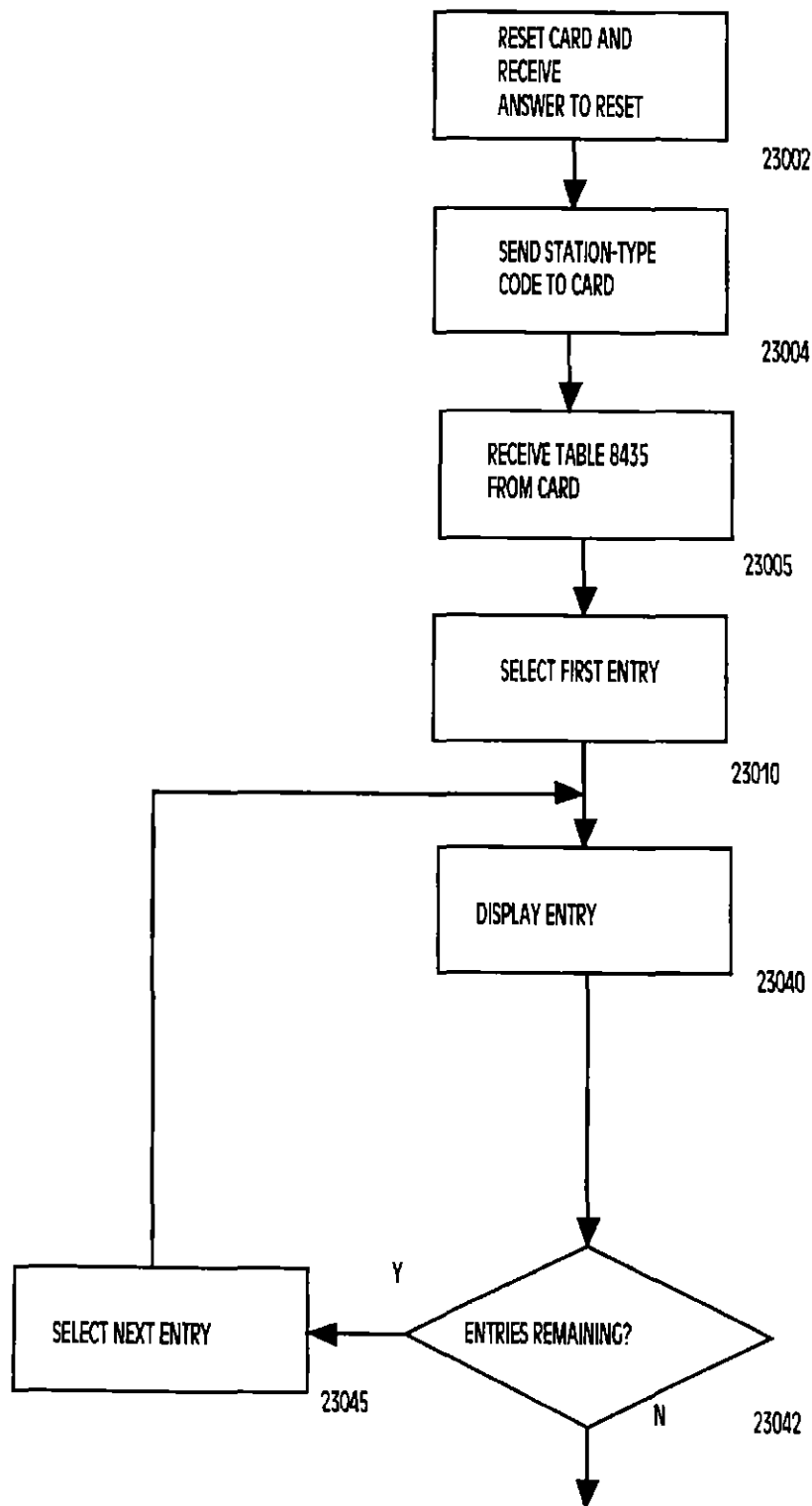


Fig. 23

U.S. Patent

Mar. 30, 1999

Sheet 30 of 34

5,890,135

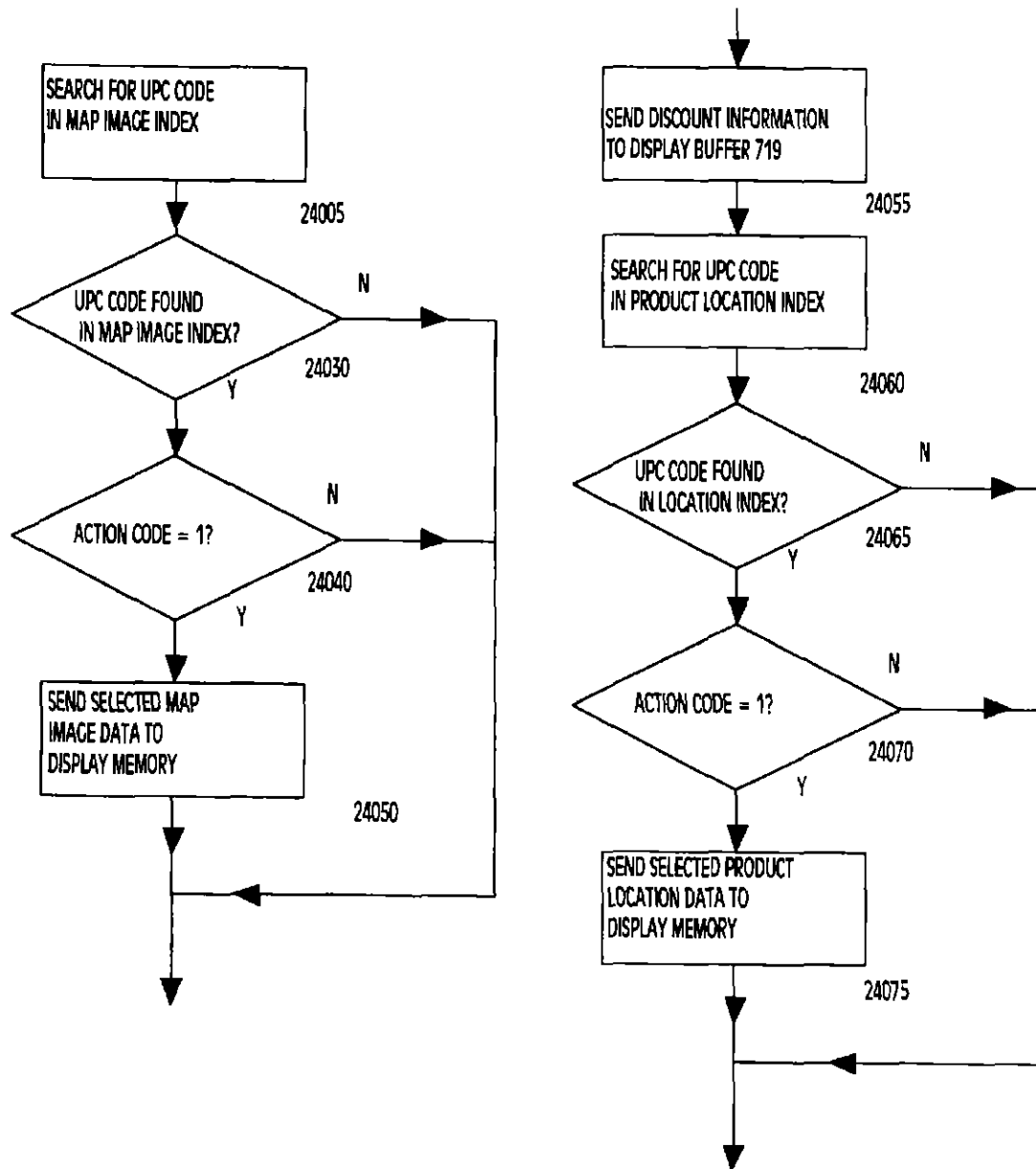


Fig. 24A

U.S. Patent

Mar. 30, 1999

Sheet 31 of 34

5,890,135

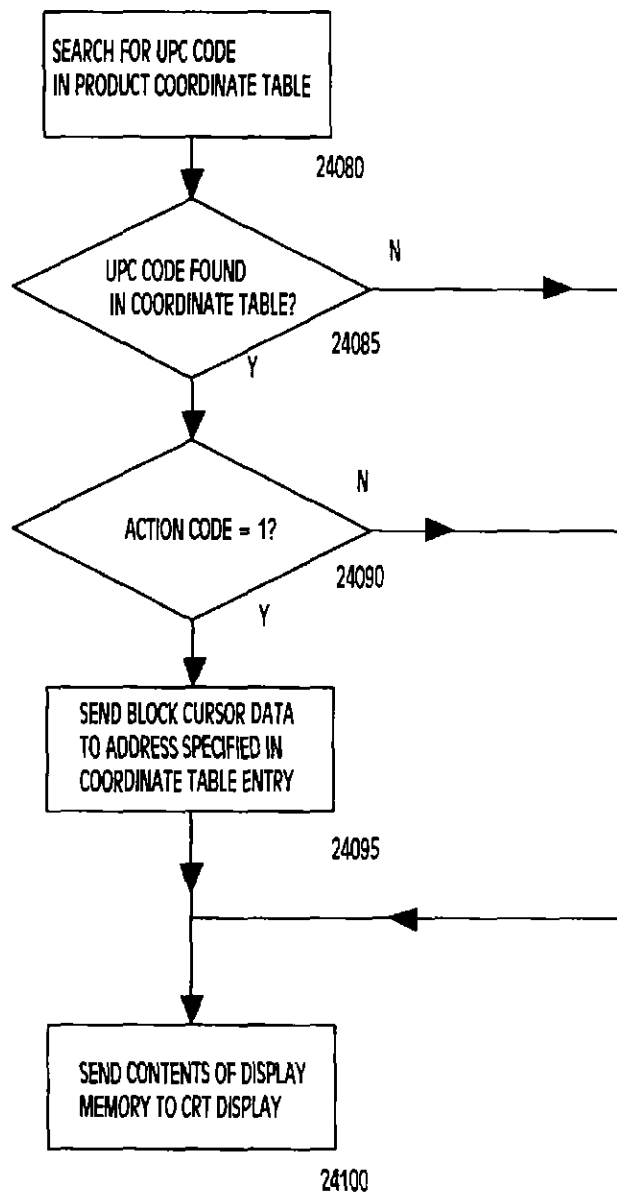


Fig. 24B

U.S. Patent

Mar. 30, 1999

Sheet 32 of 34

5,890,135

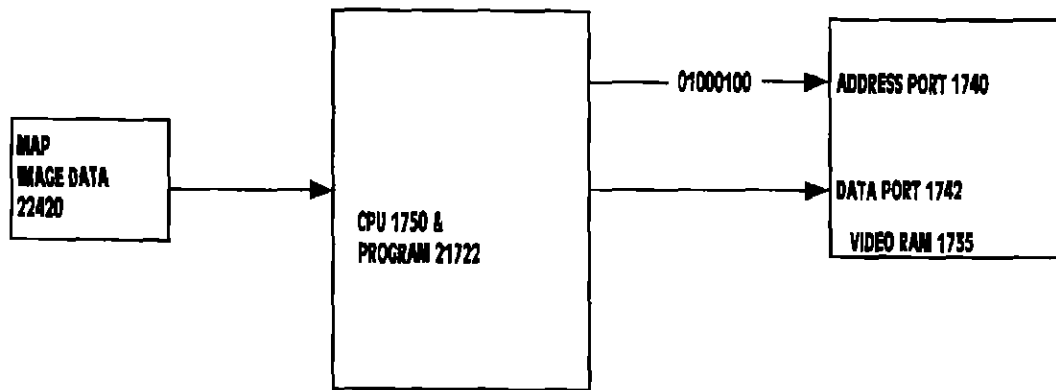


Fig. 25A

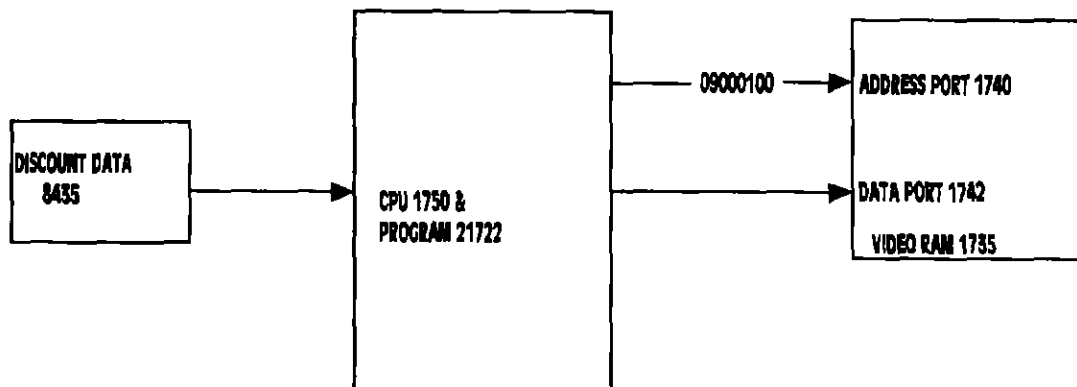


Fig. 25B

U.S. Patent

Mar. 30, 1999

Sheet 33 of 34

5,890,135

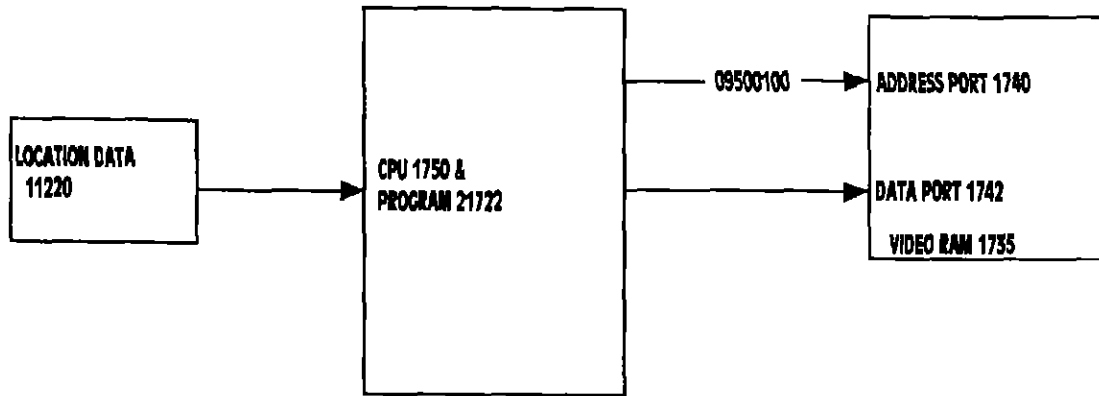


Fig. 25C

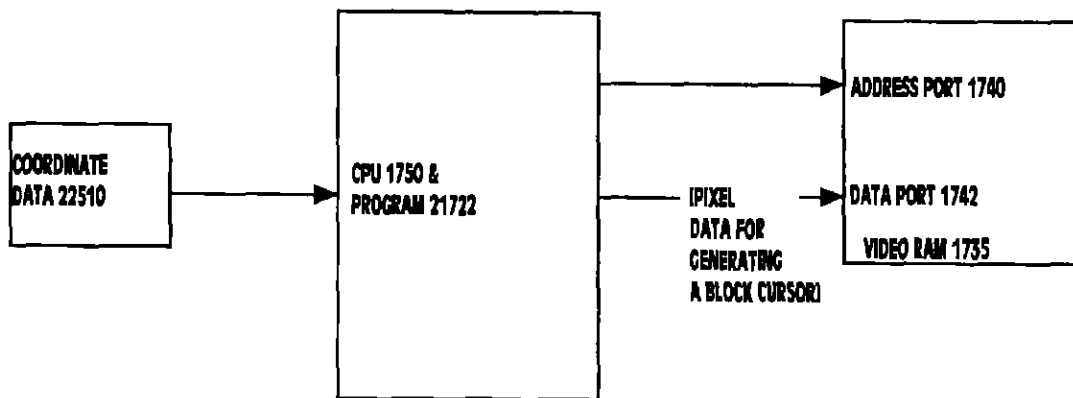


Fig. 25D

U.S. Patent

Mar. 30, 1999

Sheet 34 of 34

5,890,135

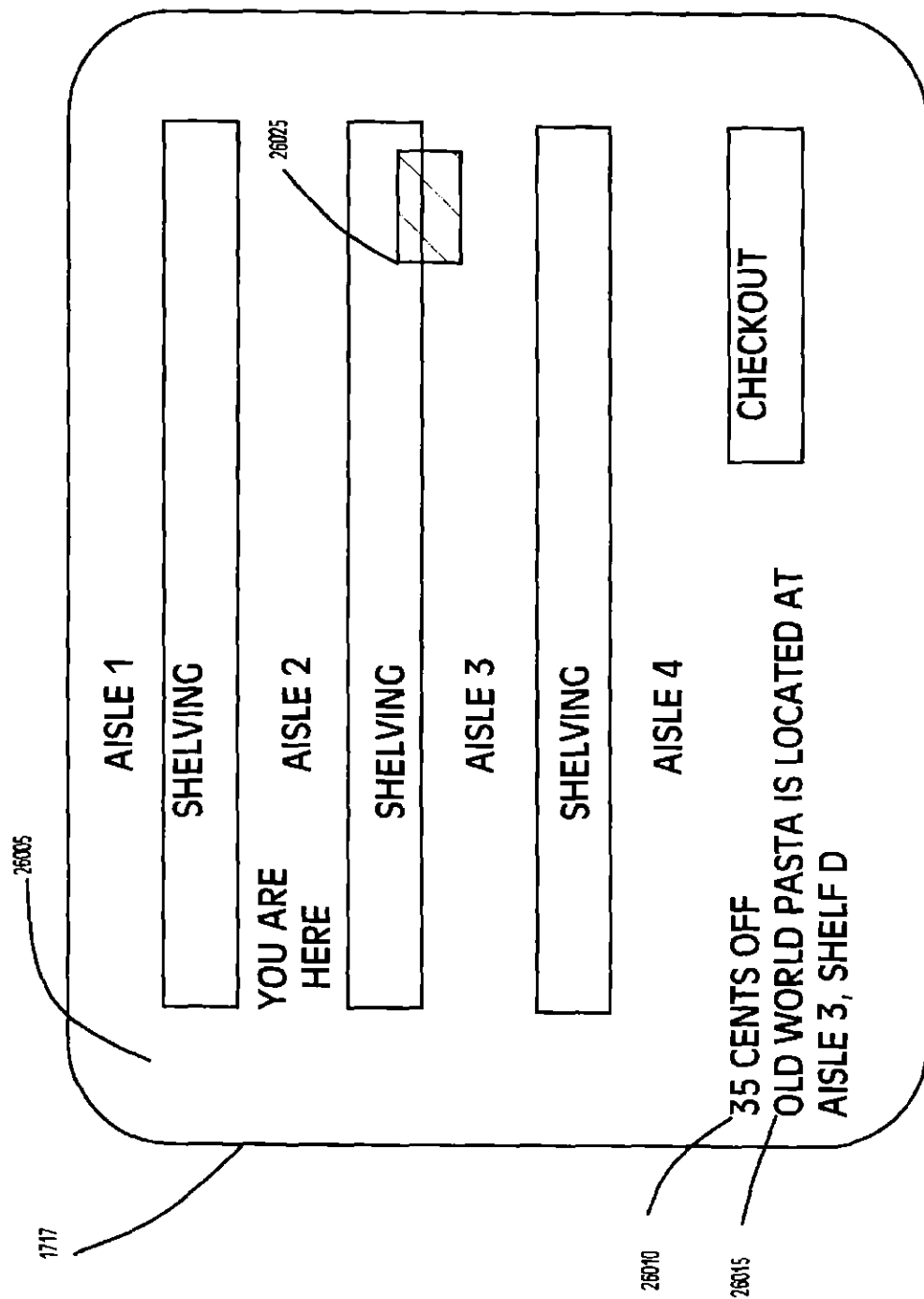


Fig. 26

5,890,135

1

SYSTEM AND METHOD FOR DISPLAYING PRODUCT INFORMATION IN A RETAIL SYSTEM

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to a retail system and, more particularly, to a system and method for displaying product information in a retail system.

2. Description of Related Art

Discount coupons are a popular means to stimulate sales of products such as grocery store items. In 1992, approximately 310 billion coupons were distributed and 7.7 billion coupons were redeemed, saving customers \$4 billion. It has been estimated that in-store couponing coupled with advertising increases sales by 544%.

A typical marketing scheme involves placing coupons in a newspaper, by printing the coupons in the newspaper or by inserting coupon inserts into the newspaper, and allowing customers to bring the printed coupons to a store for redemption. One problem with this scheme is that the redemption rate is typically only a few percent of the coupons printed, the unredeemed coupons representing an overhead associated with this scheme. To alleviate this overhead, another marketing scheme involves distributing the coupons in the store, thereby avoiding the cost of printing coupons in a newspaper, and capitalizing on the fact that 66% of buyer decisions are made at the time of product purchase. Both the in-store scheme and the newspaper scheme, however, are susceptible to fraud by an unscrupulous retailer that requests reimbursement payments by presenting unredeemed coupons to the clearing house. Other schemes include delivering coupons to customers through the mail, distributing coupons in or on the product package, and distributing coupons at checkout. All of these schemes have an overhead cost of handling the coupons and of sending the redeemed coupons to a clearing house to enable product manufacturers to reimburse retailers for the reduction in proceeds resulting from coupon redemptions.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a convenient and stimulating shopping environment that allows the customer to acquire discount coupons and to track relationships between the acquired coupons and available products.

It is another object of the present invention to display an image of the products corresponding to the acquired coupons.

To achieve these and other objects of the present invention, in a system including a communication device and a plurality of portable cards each having a memory, a method of operating the system comprises the steps of reading a first signal from the memory of a card in the plurality of cards, in response to a person presenting the card at the communication device, the first signal corresponding to a product; generating, responsive to the first signal, a second signal containing an image of the product; and displaying the second signal.

According to another aspect of the present invention, a retail system comprises a plurality of portable cards each having a card memory; a communication device; first memory for storing a signal containing an image of a product; a reader that reads a first signal from the card memory of a card in the plurality of cards, in response to a

2

person presenting the card at the communication device, the first signal corresponding to a product; a generator for accessing the first memory, using the first signal, to generate a second signal; and a display for displaying the second signal.

According to yet another aspect of the present invention, in a system including a plurality of product areas, a plurality of portable cards each having a memory, a first communication device, and a checkout area having a second communication device, a method of operating the system comprises the steps of reading a first signal from the memory of a card in the plurality of cards, in response to a person presenting the card at the first communication device, the first signal corresponding to a product in one of the product areas; displaying, responsive to the first signal, an image of the product; removing the product from one of the product areas; and reading the first signal from the memory of the card, in response to a person presenting the card at the second communication device.

According to yet another aspect of the present invention, in a system including a plurality of portable cards each having a memory, a first communication device, and a checkout area having a second communication device, a method of operating the system comprises the steps of a first reading step of reading a first signal from the memory of a card in the plurality of cards, in response to a person presenting the card at the communication device, the first signal corresponding to a product; generating, responsive to the first signal, a second signal containing an image of the product; displaying the second signal; a second reading step of reading the first signal from the memory of the card, in response to a person presenting the card at the second communication device; receiving a third signal corresponding to a product; and determining a price for the product depending on whether the first signal, read in the second reading step, corresponds to the third signal.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic diagram of a retail system in accordance with a first preferred embodiment of the present invention.

FIG. 2 is a drawing of a home computer in the first preferred retail system.

FIG. 3 is a plan view of a retail store in the first preferred system.

FIGS. 4A and 4B are another type of view of the retail store.

FIG. 5 is a drawing of portion of the display kiosk shown in FIG. 4A.

FIGS. 6A, 6B, and 6C are enlarged views of some products shown in FIGS. 4A and 4B.

FIG. 7A is a plan view of one of the customer cards in the preferred system.

FIG. 7B is a side view of the card shown in FIG. 7A.

FIG. 7C is an enlarged, partial view of the card shown in FIG. 7A.

FIG. 8 is a block diagram of the customer card.

FIG. 9 is a diagram of some memory contents of one of the customer card.

FIG. 10 is a block diagram of the first preferred display kiosk shown in FIGS. 1, 3, and 4A.

FIGS. 11A and 11B are diagrams of some data structures in the first preferred display kiosk.

FIG. 12 is a block diagram of the check-out station shown in FIG. 4B.

5,890,135

3

FIG. 13 is a flow chart of a processing performed by the display kiosk.

FIGS. 14A and 14B are a flow chart showing a portion of the processing of FIG. 13 in more detail.

FIGS. 15A, 15B, 15C, and 15D are diagrams showing data paths within the display kiosk during the execution of the processing shown in FIGS. 14A and 14B.

FIG. 16 is a diagram of a CRT display generated by the display kiosk.

FIG. 17 is a diagram of a paper printout generated by the display kiosk.

FIG. 18 is a flow chart of a processing performed by the check-out station.

FIG. 19 is a flow chart of a processing performed by one of the customer cards.

FIG. 20 is a block diagram of a system including a market research center and multiple check-out stations.

FIG. 21 is a block diagram of a display kiosk in accordance with a second preferred embodiment of the present invention.

FIGS. 22A, 22B, and 22C are diagrams of some data structures in the second preferred display kiosk shown in FIG. 21.

FIG. 23 is a flow chart of a processing performed by the second preferred display kiosk.

FIGS. 24A and 24B are a flow chart showing a portion of the processing of FIG. 23 in more detail.

FIGS. 25A, 25B, 25C, and 25D are diagrams showing data paths within the display kiosk during the execution of the processing shown in FIGS. 24A and 24B.

FIG. 26 is a diagram of a CRT display generated by the second preferred display kiosk.

The accompanying drawings which are incorporated in and which constitute a part of this specification, illustrate embodiments of the invention and, together with the description, explain the principles of the invention, and additional advantages thereof. Throughout the drawings, corresponding parts are labeled with corresponding reference numbers.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 shows a system of distributing discount coupons to retail customers in accordance with a first preferred embodiment of the present invention. The first preferred system includes computer networks 1020, residential homes 1025, 1035, and 1030, portable cards 295, 315, 285, and store 1000. A coupon-dispensing computer within computer networks 1020 stores electronic coupons and distributes the stored coupons to the homes via telephone signal paths 180. A computer and special processor in each of homes 1025, 1030, and 1035 has hardware and software for receiving a coupon from computer networks 1020 and storing the coupon on each of portable cards 295, 315, and 285, respectively. Customers then bring cards 295, 315, and 285 to store 1000, as shown schematically in FIG. 1.

Store 1000 includes roof structure 1017 and display kiosk 1710 under roof structure 1017. Roof structure 1017 includes roof section 1010, window 1015 coupled to roof section 1010, and roof section 1005 coupled to window 1015. Display kiosk 1710 includes circuitry (hardware and software) for reading product identification data from a portable card and displaying information about the product identified by the data, including an image of the product and a spatial location of the product, as discussed in more detail below.

4

FIG. 2 shows a part of home 1035 in more detail. Home 1035 includes personal computer 2000 having keyboard 2425, cathode ray tube (CRT) 2420, and mouse 2423. To receive an electronic coupon, the user establishes a telephone connection between computer 2000 and a computer within network 1020 through modem 2410. Subsequently, the user logs onto the computer within network 1020 and reads Electronic mail sent by the coupon-dispensing computer. The customer then prints the mail message to loading device 2415. Device 2415 receives a customer card 315. A device driver program, executed by PC 2000, and device 2415 act to translate the textual electronic mail message into a binary electronic coupon and write the coupon onto card 315. In other words, device 2415 writes a product identification signal, corresponding to a selected product, onto the customer card 315.

An invention embodied in this process of sending discount coupons to a customer card is the subject of copending U.S. application Ser. No. 08/603,482 of KEN R. POWELL for SYSTEM AND METHOD FOR DISTRIBUTING COUPONS THROUGH A SYSTEM OF COMPUTER NETWORKS, filed Feb. 20, 1996, the contents of which is herein incorporated by reference.

FIG. 3 is a plan view of store 1000, including shelves 11, 12, 21, 22, 31, and 32 and product areas 111, 121, 110, 120, 130, 141, 151, 161, 140, 150, 160, 171, 181, 170, 180, and 190. Customers shop in store 1000, by removing products from the shelves and bringing the products to checkout counter 900. When a customer visits store 1000, a customer can insert their customer card to display kiosk 1710 to view information about information about the products identified on the card, including the appearance and location of the product.

In FIG. 3, shelf assembly 10 includes shelf 11, which is designated as "SHELF A" by a poster within store 1000, and shelf 12, designated "SHELF B" by a poster within store 1000. Shelf assembly 20 includes shelf 21, designated "SHELF C" by a poster with store 1000, and shelf 22, designated "SHELF D" by a poster within store 1000. Shelf assembly 30 includes shelf 31, designated "SHELF E" by a poster within store 1000, and shelf 32, designated "SHELF F" by a poster within store 1000.

Shelf assembly 10 and wall 14 define an aisle 15. Aisle 15 is designated "AISLE 1" by a poster within store 1000. Shelf assembly 10 and shelf assembly 20 define aisle 16. Aisle 16 is designated "AISLE 2" by a poster within store 1000. Shelf assembly 20 and shelf assembly 30 define an aisle 24. Aisle 24 is designated "AISLE 3" by a poster within store 1000. Shelf assembly 30 and checkout counter 900 define an aisle 34. Aisle 34 is designated "AISLE 4" by a poster within store 1000.

FIGS. 4A and 4B show another view of store 1000 in accordance with a first preferred embodiment of the present invention. FIGS. 4A and FIG. 4B are each a partial view of store 1000. Customers 210, 220, 230, 240, 250, 270, 280, and 290, shop in store 1000.

Store 1000 includes shelf assemblies 10, 20, and 30, defining aisles between the shelves. Store 1000 has a plurality of product areas, each corresponding to a respective product. Product Area 110 has Acme brand ammonia. Product Area 120 has Old World brand pasta. Product Area 130 has Lighthouse brand light bulbs.

In FIGS. 4A and 4B, poster 9 contains the text SHELF B, allowing the customers to identify the shelf containing product areas 110, 160, and 130 as shelf B. Poster 19 contains the text SHELF D, allowing the customers to

5,890,135

5

identify the shelf containing the product areas 140, 150, and 120 as shelf D. Poster 29 contains the text SHELF F, allowing the customers to identify the shelf containing product areas 170, 180, and 190 as shelf F. Similarly, other posters (not shown) identify other shelves and aisles within store 1000.

Because of the large number of coupons that may be available to a customer, from either in the store or outside the store, a customer such as customer 310 may wish to present their card 315 to display kiosk 1710. Kiosk 1710 has circuitry for displaying information about the coupons loaded onto the card, including the product and discount amount of the coupon. Kiosk 1710 also has circuitry for displaying information about the products corresponding to the coupons loaded onto the card, including a verbal description of the product, an image of the product, and a spacial location of the product. Kiosk 1710 has circuitry to display information on paper 1719, using printer 1718, or on cathode ray tube (CRT) 1717.

FIG. 5 shows a section of display kiosk 1710 in more detail. Interface slot 1715 has a width sufficient to accommodate the width of one of the customer cards. When a customer card is in interface slot 1715, conductive contact 1777 inside interface slot 1715 touches contact 7427 (shown in FIG. 7C) on a customer card. Interface slot 1715 has other contacts (not shown) for touching the other card contacts 7420 (shown in FIG. 7C). The operation of station 1710 will be discussed in more detail below.

FIG. 6A shows an enlarged view of some of the bottles of ammonia 112. Each bottle of ammonia has a common Universal Product Code (UPC) label 114, which is a group of parallel lines that encodes a number (7170312780) that uniquely identifies acme ammonia. In other words, label 114 is different than labels of units of other products. Each bottle of ammonia 112 also has a common character label 113 that verbally describes the product. Character label 113 is "ACME AMMONIA." Label 113 is different than labels of units of other products.

Product Area 120 has boxes of pasta 122 grouped together on multiple shelves. Boxes of pasta 120 are contiguously grouped, meaning that no other product is between any two boxes of pasta 120. No other product is between product station 125 and boxes of pasta 122. Product Station 125 is on a shelf under some of the boxes 122. In other words, station 125 is adjacent to boxes 122 and supported by a shelf in vertical alignment with some of the boxes 122.

FIG. 6B shows an enlarged view of some of the boxes of pasta 122. Each box of pasta 122 has a common Universal Product Code (UPC) label 124, which is a group of parallel lines that encodes a number (7170312682) that uniquely identifies Old World pasta. In other words, label 124 is different than labels of units of other products. Each box of pasta 122 also has a common character label 123 that verbally describes the product. Character label 123 is "OLD WORLD PASTA." Label 123 is different than labels of units of other products.

Product Area 130 has boxes of light bulbs 132 grouped together on multiple shelves. Boxes of light bulbs 132 are contiguously grouped, meaning that no other product is between two boxes of light bulbs 132. No other product is between product station 135 and boxes of light bulbs 132. Product Station 135 is on a shelf under some of the boxes 132. In other words, station 135 is adjacent to boxes 132 and supported by a shelf in vertical alignment with some of the boxes 132.

FIG. 6C shows an enlarged view of some of the boxes of light bulbs 132. Each box of light bulbs 132 has a common

6

Universal Product Code (UPC) label 134, which is a group of parallel lines that encodes a number (7170312350) that uniquely identifies Lighthouse light bulbs. In other words, label 134 is different than labels of other products. Each box 132 also has a common character label 133 that verbally describes the product. Character label 133 is "LIGHTHOUSE LIGHT BULBS." Label 133 is different than labels of other products.

Similarly, other product area in the store each have a set of respective products contiguously grouped together. The respective units of a certain product have a common label, different than labels on units of other products, that uniquely identifies the certain product. Product area 140 has bottles of ketchup 142 contiguously grouped together. Product area 160 has loaves of bread 162 contiguously grouped together. Product area 170 has cartons of milk 172 contiguously grouped together. Product area 180 has packages of bacon 182. Product area of 190 has packages of butter 192 contiguously grouped together. Product area 111 (FIG. 3) has boxes of paper towels contiguously grouped together. Product area 121 has rolls of paper towel contiguously grouped together. Product area 141 has boxes of crackers contiguously grouped together. Product area 151 has canned fruit contiguously grouped together. Product area 161 has canned vegetables contiguously grouped together. Product area 171 has cans of meat contiguously grouped together. Product area 181 has boxes of flour contiguously grouped together.

An overview of processing performed by the customers and hardware will now be described. Before shopping in the store, each of these customers obtained a customer card. For example, customer 230 obtained customer card 235 from a bank, by completing an application for the bank. The application contained questions to collect demographic data, including birth date, income level, past buying patterns, geographic location, size of family, level of education, and job-related data. The bank subsequently wrote customer identification data for customer 230 onto customer card 235, and issued customer card 235 to customer 230, and sent the customer's demographic data to a marketing research center which then stored the demographic data on disk. Each of customers 210, 220, 240, 250, 270, 280, and 290 obtains a respective customer card in a similar manner. In other words, for each customer the preferred method writes demographic data for the customer onto a disk in market research center, and writes personal identification data for the customer onto a respective card for the customer.

After redemption data, including customer identification data from a plurality of cards, is compiled and sent to a marketing research center, as described below, the customer identification data is used to access the corresponding demographic data, thereby providing the manufacturer with valuable marketing data on coupon program effectiveness and customer demographics.

A customer may start shopping with a card already loaded with electronic coupons. For example, the store may preload new cards as an incentive for completing and submitting a check cashing application. Further, the customer may have a device at home, such as computer 2000 shown in FIG. 2, for depositing coupons onto the card. Thus, a customer may arrive at store 1000 with coupons already on the card.

While shopping in store 1000, each of customers 210, 220, 230, 240, 250, 270, 280, and 290 carries his or her respective customer card. Customer 210 carries card 215, customer 220 carries card 225, customer 230 carries card 235, customer 240 carries card 245, customer 250 carries card 255, customer 270 carries card 275, customer 280

5,890,135

7

carries card 285, and customer 290 carries card 295. Each customer tows a shopping cart to hold selected products. Customer 210 tows cart 212, customer 220 tows cart 222, customer 230 tows cart 232, customer 240 tows cart 242, customer 250 tows cart 252, customer 270 tows cart 272, customer 280 tows cart 282, and customer 290 tows cart 292. Each customer removes one or more desired products from a shelf and places the removed product into her cart.

Upon completion of shopping, the customer brings selected products from shelves 10, 20, and 30 to checkout counter 900. The customer redeems the electronic coupons at the checkout area, by inserting her customer card into checkout station 915. For example, a customer such as customer 290 in FIG. 4B completes the purchase of her selected products 293 by transferring products 293 from her cart 292 to counter 900, and by inserting card 295 into checkout station 915. Subsequently, a checkout clerk (not shown) scans each selected product past UPC bar code reader 910. Bar code reader 910 is an optical detector. In other words, bar code reader 910 detects an electromagnetic signal. A processor coupled to station 915 and reader 910 determines whether the most recently scanned product is on a discount list stored in card 295. If the most recently scanned product is identified in this discount list, a price for the product is determined using the discount data corresponding to the product, and the resulting price is displayed on display 917. Checkout counter 900 scans and processes each product 293 in a similar manner.

Similarly customer 280 in FIG. 4B will complete the purchase of her selected products 283 by transferring products 283 from her cart 282 to counter 900, and by inserting card 285 into checkout station 915; and the checkout clerk (not shown) will scan each selected product 283 past UPC bar code reader 910. Customer 270 will complete the purchase of her selected products 273 by transferring products 273 from her cart 272 to counter 900, and by inserting card 275 into checkout station 915; and the checkout clerk (not shown) will scan each selected product 273 past UPC bar code reader 910.

Periodically, checkout counter 900 sends redemption data to an electronic clearing house. The redemption data sent to the clearing house includes the identification of the store, identification of the coupons redeemed and of respective quantities of coupon redemptions. Periodically, checkout counter 900 sends redemption data to a market research center. The redemption data sent to the research center includes the identification of the store and of the customers who presented electronic coupons for redemption.

The preferred system and method will now be described in more detail.

FIG. 7A shows a plan view of customer card 215 carried by customers 210, and FIG. 7B shows a side view of card 215. Card 215 is 8.5 cm by 5.4 cm, the length and width of a typical financial credit card. Card 215 is slightly thicker than a typical financial credit card. Card 215 includes a magnetic stripe 7410, interface contacts 7420 for communication with the product stations and the checkout station, and embossed area 7430 for displaying the card owner's name. Magnetic stripe 7410 allows a conventional credit card stripe reader to read basic data from the card. Magnetic stripe 7410 is not necessary to the operation of the preferred embodiment of the invention, described in more detail below.

FIG. 7C shows interface contacts 7420 in more detail. Interface contacts 7420 are configured in accordance with ISO7816-2: 1988(E), Identification cards—Integrated

8

circuit(s) cards with contact—Part 2: Dimensions and locations of the contacts, promulgated by the International Organization for Standardization (ISO), and available from the American National Standards Institute (ANSI), 11 West 42nd Street, New York, N.Y. 10036. According to ISO 7816-2, contact 7421 is assigned to VCC (supply voltage), contact 7422 is assigned to RST (reset signal), contact 7423 is assigned to CLK (clock signal), contact 7424 is reserved for future use, contact 7425 is assigned to GND (ground), contact 7426 is assigned to VPP (program and voltage), contact 7427 is assigned to I/O (data input/output), and contact 7428 is reserved for future use. Card 215 communicates with the product stations and the checkout stations through contact 7427 using a half duplex scheme, meaning that contact 7427 is for communicating data signals either to or from the card.

FIG. 8 is a block diagram of customer card 215, including central processing unit 8450, memory 8460, and battery 8470 for supplying power to interface 8425, processor 8450, and memory 8460. Memory 8460 is a random access, addressable device. Station interface 8425 includes a serial to parallel converter for transferring data signals between contact 8427 and CPU 8450 over parallel bus 8452. Memory 8460 stores a program 8465 executed by processor 8450, customer identification data 8467, and authorization data 8468. Customer identification data 8467 includes a sequence of digits that uniquely identifies the holder of the card. Customer identification data 8467 includes the card holder's social security number. For example, identification data 8467 in customer card 235 uniquely identifies customer 230. Authorization data 8468 includes a sequence of digits that includes a code identifying the store or stores in which the card may be used to obtain a paperless coupon. Authorization data 8468 also includes date data indicating an expiration date for the card. Depending on the card holder's contractual relationship with the card issuer, the card issuer may periodically update this date data to renew the card when the current date data indicates the card is expired. Store authorization data 8468 also contains a field identifying that the card is a customer card (rather than a programming card, which is described below).

Memory 8460 also stores product data received from one or more coupon dispensing devices. This product data includes a list of product discounts 8435. When a customer inserts a customer card into a coupon dispensing device, processor 8450 receives an identification code for the product from the device and adds the code to the list.

FIG. 9 shows some the contents list 8435 starting at location 30 of memory 8460 of customer card 215. An electronic coupon is represented by three rows in list 8435: a 10 digit UPC product code in the first row, discount format data in the second row ("1" signifying cents, "2" signifying percentage), and discount quantity data in the third row. In FIG. 9, the customer card is storing three electronic coupons, reflecting the fact that customer 210 has received electronic coupons from devices either before or during her current visit to store 1000. In list 8435, the memory field having the product code 7170312682 corresponds to the UPC code on boxes of Old World Pasta 124. The next memory field stores the format of the discount quantity data, with "1" signifying cents and "2" signifying percentage in tenths of a percent. The next memory field stores the discount quality data, 150, signifying that the discount being offered for Old World Pasta 124 is \$1.50. The memory field having the product code 7170312350 corresponds to the UPC code on boxes of Lighthouse Light Bulbs 134. The next memory field stores the format of the discount quantity data, with "1" signifying

5,890,135

9

cents. The next memory field stores the discount quantity data, **200**, signifying that the discount being offered for Lighthouse Light Bulbs **134** is \$2.00. The memory field having the product code 7170312780 corresponds to the UPC code on ammonia bottles **112**. The next memory field stores the format of the discount quantity data, with "1" signifying cents. The next memory field stores the discount quantity data, **50**, signifying that the discount being offered for ammonia bottles **112** is 50 cents.

Each customer cards has the same hardware structure as customer card **215**.

Programming card **55** has the same hardware structure as customer card **215**. An invention embodied in programming card **55** is the subject of copending application of KEN R. POWELL for DEVICE AND METHOD OF PROGRAMMING A RETAIL SYSTEM, Ser. No. 08/468,820, filed on Jun. 6, 1995, the contents of which is herein incorporated by reference. The product stations are the subject of copending application of KEN R. POWELL for RETAIL SYSTEM, Ser. No. 08/468,816, filed on Jun. 6, 1995, now U.S. Pat. No. 5,727,153 for RETAIL STORE HAVING A SYSTEM OF RECEIVING ELECTRONIC COUPON INFORMATION FROM A PORTABLE CARD AND SENDING THE RECEIVED COUPON INFORMATION TO OTHER PORTABLE CARDS, the contents of which is herein incorporated by reference.

FIG. 10 is a block diagram of display kiosk **1710** shown in FIGS. 1, 3, and 4A. Magnetic disk drive **1725** provides storage of programs and of product data. The product data stored on disk **1725** includes product name data and product location data. Optical disk drive **1735** contains a CD-ROM (Compact Disk-Read Only Memory) disk that stores product image data. The contents of CD-ROM **1737** tend to remain current for at least several months, since the packaging of a product corresponding to a certain UPC code tends to remain constant over time. Preferably, CD-ROM **1737** can be obtained from a national supplier.

CRT display **1717** is 1024 pixel rows by 1280 pixel columns. Video ram **1735** has 1024x1280 locations, a location for each pixel on display **1717**. CRT controller **1737** has circuitry to read video ram **1735** to generate and send signals to CRT **1717**. Thus, the address of a pixel in video ram **1735** determines the location of the pixel on display **1717**.

CPU **1750** executes program **1722**, in random access, addressable memory **1720**, to display information reflecting the contents of a customer card. CPU **1750** displays the information on CRT display **1717**, by writing pixel data into video RAM **1735**. CRT controller **1737** reads the pixel data from RAM **1737** to send video signals to CRT **1717**.

FIGS. 11A and 11B show some data structures within display kiosk **1710**. Structure **11100** includes image data for displaying an image of products corresponding to coupons on a customer card. Structure **11100** normally resides on CD-ROM **1737**. Structure **11100** includes UPC table **11110**, which is a list of entries sorted by UPC code. Each entry in table **11110** includes three fields. A first field is a UPC code; a second field is an action code, described in more detail below; and a third field is a pointer to video data **11120** for the product identified by the UPC code. Video data **11120** is a group of records each containing pixel data for a respective product. CPU **1750** uses the pointer, in the third field of an entry in table **11100**, to access a selected record of pixel data **11120**.

During processing by CPU **1750**, various parts of data structure **11100** may be automatically brought into memory **1720** with a virtual memory mapping, as is well known in the art.

10

Data structure **11200** stores product location information. In contrast to data structure **11100**, data structure **11200** tends to contain product information that is specific to store **1000**. Data structure **11200** normally resides on disk **1725**. Data structure **11200** includes table **11210**, which is a list of entries sorted by UPC code. Structure **11200** also includes spacial location data **11200**, which is a group of records each containing ASCII (American Standard Code for Information Interchange) text identifying the spatial location of a respective product. Each entry in table **11210** includes a UPC code in a first field, an action code in a second field, and a pointer to a selected location data record **11220** in a third field. CPU **1750** uses the pointer to access a selected record of location information.

Thus, memory **1720**, magnetic disk **1725**, and optical disk drive **1735**, together act to store product image and product location information.

CPU **1750** brings various parts of data structure **11200** into memory **1720**, using a virtual memory mapping scheme.

Data structure **11300** includes table **11310** and supplementary product data **11320**. Data structure **11300** normally resides on disk **1725**. Supplementary product data contains ASCII text providing additional information about products in the store. As shown in data structure **11300**, supplementary product record **11325** provides information about a product different from the product identified in the corresponding entry in table **11310**.

FIG. 12 is a block diagram of checkout counter **900** shown in FIG. 4B. Disk **925** provides long term storage. CPU **950** executes instructions in random access, addressable memory **920**.

CPU **950** and program **922** act to detect a product scanned by UPC reader **910**, determine a reference price for the product, search for the product's identification in the memory of a customer card, and deduct a discount from the reference price if the product is identified in the customer card memory. CPU **950** then displays the price of the product on display **917**. CPU **950** writes coupon redemption data onto disk **925**. Periodically, CPU **950** sends marketing redemption data to a market research center through modem **930**. Periodically, CPU **950** also sends clearing house redemption data to a clearing house through modem **930**.

FIG. 13 shows a processing performed by CPU **1750** and program **1722** in display kiosk **1710**, when a customer inserts a card into card interface **1715**. When a customer, such as customer **310**, inserts customer card **315** into interface slot **1715**, a switch (not shown) in interface slot **1715** alerts CPU **1750** that a card has been inserted into the slot. When a customer card is in interface slot **1715**, conductive contacts (not shown) inside interface slot **1715** touch each card contact **7420**. Subsequently, CPU **1750** causes card interface **1725** to reset the card by applying a clock signal to card contact **7423**. The customer card then answers the reset by sending a block of data, including identification data **8467** and authorization data **8468**, through card contact **7427**. CPU **1750** then receives the answer-to-reset from the card (step **13002**). CPU **1750** then sends a data block containing a station-type code indicating a display kiosk (step **13004**). CPU **1750** then receives the contents of table **8435** in memory **8460** of the customer card, and temporarily stores these table contents in memory **1720** of the display kiosk (step **13005**). CPU **1750** selects the first entry in table **8435** (step **13010**). CPU **1750** displays product and price information for the presently selected entry on display **1717**. (Step **13040**). If there are entries remaining (step **13042**),

11

5,890,135

CPU 1750 selects the next entry in table 8435 (step 13045) and processing proceeds to step 13040. If there are no entities remaining (step 13042), there is no further processing shown in FIG. 13.

Steps 13040, 13042, and 13045 may execute repeatedly without manual intervention. For example, step 13040 may pause for 10 seconds before control passes to the next step. Alternatively, step 13040 may pause until the user presses a button entitled DISPLAY NEXT COUPON (not shown) on station 1710.

The communication protocol between display kiosk 1710 and a customer card is described in more detail in ISO/IEC 7816-3: 1989 (E), Identification cards—Integrated circuit(s) cards with contacts—Part 3: Electronic signals and transmission protocols; and ISO/IEC 7816-3: 1989/Amd.1: 1992 (E), Part 3: Electronic signals and transmission protocols, AMENDMENT 1: Protocol type T=1, synchronous half duplex block transmission protocol. Both of these standards are promulgated by the International Organization for Standardization (ISO) and distributed by the American National Standards Institute (ANSI).

FIGS. 14A and 14B show the processing of step 13040 of FIG. 13 in more detail. To display an entry in table 8435, CPU 1750 searches for the entry's UPC code in image data index 11110. (step 14005). If CPU 1750 finds the UPC code in the image index (step 14030), CPU 1750 determines whether the second field of the found entry is equal to 1 (step 14040). If the second field is equal to 1, CPU 1750 uses the third field as a pointer to an image data record 11120 and sends this selected record to video RAM 1735 (step 14050). If CPU 1750 does not find the UPC code in the image index (step 14030) or determines that the second field of the found entry is not equal to 1 (step 14040), CPU 1750 skips step 14050.

CPU 1750 then reads discount information 8435 from the customer card, translates the binary-encoded numerical discount data into character data, translates the character data into graphics data, and sends the graphics data to video RAM 1735 (step 14055).

Next, CPU 1750 searches the product location index 11210 (step 14060) and if the UPC code is found in the location index (step 14065), and the second field of the found entry is 1 (step 14070), CPU 1750 uses the third field of the found entry to point to a selected record of location text 11220. CPU 1750 translates this location text to pixel data and sends the pixel data to video RAM 1735. (step 14075). If the UPC code is not found in the location index (step 14065) or the second field of the found entry is not equal to 1 (step 14070), CPU 1750 skips step 14075.

CPU 1750 then searches for the UPC code in related product index 11310 (step 14080) and if the UPC code is found (step 14085), CPU 1750 reads the second field of the found entry (step 14090) and if the second field is equal to 1, CPU 1750 uses the third field as a pointer to text describing the related product, translates the text to pixel data and sends the pixel data to video RAM 1735 (step 14095). If the UPC code is not found or if the second field of the found entry is not equal to 1 (step 14090), CPU 1750 skips step 14095.

CRT controller 1737 reads video RAM 1735 to generate and send display signals to CRT 1717 (step 14100).

In other words, data structure 11100 stores a certain type of product information (product image data), and data structure 11200 stores two other types of product information (a verbal description of the product and a location of the product). CPU 1750 reads a coupon from the memory of a

12

card, in response to a person inserting the card into slot 1715, and generates, responsive to the coupon, a display signal. CPU 1750 generates the display signal by using the UPC code in the read coupon to access data structure 11100, and by using the UPC code in the read coupon to access data structure 11200.

FIGS. 15A, 15B, 15C, and 15D show data flows within display kiosk 1710 during the processing of the method shown in FIGS. 14A and 14B. FIG. 15A shows a data flow during the processing of step 14050. CPU 1750 and program 1722 read a selected record of product image data 11120 and sends data 11120 to data port 1742 of video RAM 1735. CPU 1750 and program 1722 also send an address to address port 1740, to determine where pixels will be displayed on display 1717. As shown in FIG. 15A, the first four digits of the address signal specify the row on display 1717 and the last four digits specify the column on display 1717. Product image data 11120 is displayed beginning at row 0200, column 0250.

FIG. 15B shows a data flow within display kiosk 1710 when CPU 1750 executes step 14055. CPU 1750 and program 1722 read binary-encoded discount data 8435 from a customer card, translate the discount data to pixel data, and send the pixel data to data port 1742 of video RAM 1735. CPU 1750 and program 1722 also send an address signal 01000100 to address port 1740, to display the discount data beginning at row 100, column 100.

FIG. 15C shows a data flow within display kiosk 1710 when CPU 1750 executes step 14075. CPU 1750 and program 1722 read a selected record of ASCII location data 11220, translate the ASCII data to pixel data, and send the pixel data to data port 1742 of video RAM 1735. CPU 1750 and program 1722 also send an address signal 01000640 to address port 1740, to display the location data beginning at row 100, column 640.

FIG. 15D shows a data flow within display kiosk 1710 when CPU 1750 executes step 14095. CPU 1750 and program 1722 read a selected record of ASCII related product data 11320, translate the ASCII data to pixel data, and send the pixel data to data port 1742 of video RAM 1735. CPU 1750 and program 1722 also send an address signal 07500640 to address port 1740, to display the related product data beginning at row 750, column 640.

FIG. 16 shows a view of the CRT display 1717 after CPU 1750 performs the processing of FIGS. 14A and 14B. Pixel 16005 has coordinates (200, 250), meaning that pixel 16005 is in the row 200, column 250 of CRT display 1717. Pixel 16005 is the upper left of a display region for product image data. Pixel 16010, having coordinates (100, 100), is the upper left of a display region for coupon discount information. Pixel 16015, having coordinates (100, 640), is the upper left of a display region for product location information. Pixel 16020, having coordinates (750, 640), is the upper left of a display region for related product information.

Because the processing of FIGS. 14A and 14B writes the image of the product to video ram 1735 first, and then writes other data, the other data will overwrite some of the image data in video ram 1735. Thus, the other data will appear superimposed over the product image, as shown in FIG. 16.

FIG. 17 shows the result of another processing mode of display kiosk 1710. Display kiosk 1710 uses printer 1752 to print a shopping list onto paper 1754.

FIG. 18 shows a processing performed by CPU 950 and program 922 in checkout counter 900, when a customer checks out of store 1000. When a customer, such as cus-

5,890,135

13

customer 290, inserts customer card 295 into interface slot 914, a switch (not shown) in interface slot 914 alerts CPU 950 that a card has been inserted into the slot. When a customer card is in interface slot 914, conductive contacts (not shown) inside interface slot 914 touch each card contact 7420. Subsequently, CPU 950 causes card interface 925 to reset the card by applying a clock signal to card contact 7423. (If the card is a customer card, the card then answers the reset by sending a block of data, including identification data 8467 and authorization data 8468, through card contact 7427.) CPU 950 then receives the answer-to-reset from the card (step 18002). CPU 950 then sends a data block containing a station-type code indicating a checkout station (step 18004). CPU 950 then receives the contents of table 8435 in memory 8460 of the customer card, and temporarily stores these table contents in memory 920 of the checkout station (step 18005). During step 18005, CPU 950 also causes customer card 295 to remove all entries from list 8435, so that the electronic coupons in the list cannot be redeemed again. When the checkout clerk (not shown) moves a product past UPC reader 910, UPC reader 910 detects the UPC code on the product and sends the UPC code to CPU 750 (step 18010). CPU 950 searches the received table contents to determine whether the product scanned is identified in the table (step 18020). If the product is in the received table, CPU 950 subtracts the discount, as determined by the discount data stored in the received table, from a product reference price read from disk 925 (step 18030), and displays the resulting price of the product on display 917 (step 18040). If the product is not in the received table (step 18020), CPU 950 skips step 18030. If there are products remaining (step 18042), processing proceeds to step 18010. If there are no products remaining (step 18042), the total price is displayed (step 18044).

Product data, customer identification data 8467, authorization data 8468, and the data in list 8435 are each a type of signal.

In summary, after UPC barcode reader 910 scans a product, processor 950 determines eligibility for a discount. If a product qualifies, processor 950 displays the discounted price on display 917.

FIG. 19 shows a processing performed by one of the customer cards, such as customer card 215, in the preferred retail system. After the card is reset through contacts 2420, the customer card sends an "answer to reset" data block in accordance with the ISO standard ISO/ICE 7816-3: 1989 (E), cited above. The customer card sends identification data 8467 and authorization data 8468 in the answer-to-reset data block (step 19010). If the station then sends a block of data to the customer card, the customer card then receives the block of data through contact 7427 (step 19015). If the block contains a station-type code indicating a product station (step 19020), the customer card then adds product coupon information, from a certain location in the block, to the list 8435 (step 19030). If the block does not contain a station-type code indicating a product station (step 19020), processing proceeds to step 19070.

If the customer card is not eligible, the station will not send a block of data, step 19015 therefore does not execute, and processing ceases until the customer card is reinserted into a station, at which time the station will reset the card and processing will restart at step 19010.

Alternatively, if the block contains a station-type code indicating a display kiosk (step 19070), the customer card then sends list 8435 to the display kiosk (step 19080). In other words, CPU reads list 8435 from memory 8460, in

14

response to a customer inserting card 215 into display kiosk 710, and sends a signal corresponding to the list 8435 to the display kiosk (step 19080).

Alternatively, if the block contains a station-type code indicating a Checkout station (step 19090), the customer card then sends list 8435 to the display kiosk (step 19010). In other words, CPU 2450 reads list 8435 from memory 8460, in response to a customer inserting card 215 into checkout station 915, and sends a signal corresponding to the list 8435 to the checkout station (step 19100).

FIG. 20 shows a block diagram of a preferred retail system including marketing research center 990, with disk 995, CPU 950, and memory 920. FIG. 20 also shows a plurality of checkout stations 900. Periodically, each checkout station 900 sends a block of data summarizing the redemption transactions. The checkout stations send the data blocks, over telephone lines 941, to research center 990. Checkout stations 903 are located within a single company. Checkout stations 903 are similar to checkout stations 900, described above, except that checkout stations 903 have circuitry for communicating over network 912. Checkout stations 903 send transaction data blocks to central financial computer 911 located within the company. Central financial computer 911 periodically sends the compiled transaction data to market research center 990, over telephone lines 941. Central financial computer 911 also periodically sends clearing house redemption data to an electronic clearing house (not shown), over telephone lines 941.

FIG. 21-26 show a second preferred embodiment of the present invention. The second preferred system has features similar to those of the first preferred system, with additional features described below. In the follow description, elements of the second preferred system corresponding to elements of the first preferred system are labelled with corresponding reference numbers.

FIG. 21 is a block diagram of display kiosk 21710. CPU 1750 executes program 21722, in random access, addressable memory 1720, to display product information reflecting the contents of a customer card. CPU 1750 displays the product information on CRT display 1717, by writing pixel data into video RAM 1735. CRT controller 1737 reads the pixel data from RAM 1737 to send video signals to CRT 1717.

FIGS. 22A, 22B, and 22C show some data structures within the second preferred display kiosk 21710. Structures 11100 and 11200 in FIG. 22A and 11300 in FIG. 22B are described above in connection with the first preferred display kiosk.

In FIG. 22B Structure 22400 contains image data for displaying a map for indicating the spacial location of products corresponding to coupons on a customer card. Structure 22400 normally resides on disk 1725. Structure 22400 includes UPC table 22410, which is a list of entries sorted by UPC code. Each entry in table 22410 includes three fields. A first field is a UPC code; a second field is an action code, described in more detail below; and a third field is a pointer to pixel data for a certain map.

Structure 22400 also includes video data 22420, which is a group of records each containing pixel data for a respective map. CPU 1750 uses the pointer, in the third field of an entry in table 22410, to access a selected record of pixel data 22420. In FIG. 22B, multiple pointers point to a common map, the map for the ground floor of store 1000, because the location of multiple products can be indicated on this common map. Another pointer points to a map for the basement floor of store 1000, because the product corre-

5,890,135

15

sponding to this pointer is located in the basement of store 1000. Another pointer points to a road map indicating the location of a store 1500 (not shown), because the product corresponding to this other pointer is located in store 1500.

In FIG. 22C, table 22510 stores coordinate for displaying a map location of products corresponding to coupons on a customer card. Table 22510 normally resides on disk 1725. Each entry in table 22410 includes four memory fields. A first field is a UPC code, a second field is an action code, a third field is a Y coordinate in the form of a pixel row number for displaying the location of a product, and a fourth field is an X coordinate in the form of a pixel column number for displaying the location of the product.

FIG. 23 shows a processing performed by CPU 1750 and program 1722 in display kiosk 1710, when a customer inserts a card into card interface 1715. When a customer, such as customer 310, inserts customer card 315 into interface slot 1715, a switch (not shown) in interface slot 1715 alerts CPU 1750 that a card has been inserted into the slot. When a customer card is in interface slot 1715, conductive contacts (not shown) inside interface slot 1715 touch each card contact 7420. Subsequently, CPU 1750 causes card interface 1725 to reset the card by applying a clock signal to card contact 7423. The customer card then answers the reset by sending a block of data, including identification data 8467 and authorization data 8468, through card contact 7427. CPU 1750 then receives the answer-to-reset from the card (step 23002). CPU 1750 then sends a data block containing a station-type code indicating a display kiosk (step 23004). CPU 1750 then receives the contents of table 8435 in memory 8460 of the customer card, and temporarily stores these table contents in memory 1720 of the display kiosk (step 23005). CPU 1750 selects the first entry in table 8435 (step 23010). CPU 1750 displays product and price information for the presently selected entry on display 1717. (Step 23040). If there are entries remaining (step 23042), CPU 1750 selects the next entry in table 8435 (step 23045) and processing proceeds to step 23040. If there are no entries remaining (step 23042), there is no further processing shown in FIG. 23.

Steps 23040, 23042, and 23045 may execute repeatedly without manual intervention. For example, step 23040 may pause for 10 seconds before control passes to the next step. Alternatively, step 23040 may pause until the user presses a button entitled DISPLAY NEXT COUPON (not shown) on station 21710.

FIGS. 24A and 24B show the processing of step 23040 of FIG. 23 in more detail. To display information for an entry in table 8435, CPU 1750 searches for the entry's UPC code in map image index 22410. (step 24005). If CPU 1750 finds the UPC code in map image index 22410 (step 24030), CPU 1750 determines whether the second field of the found entry is equal to 1 (step 24040). If the second field is equal to 1, CPU 1750 uses the third field as a pointer to a map image record 22420 and sends this selected record to video RAM 1735 (step 24050). If CPU 1750 does not find the UPC code in map image index 22410 (step 24030) or determines that the second field of the found entry is not equal to 1 (step 24040), CPU 1750 skips step 24050.

CPU 1750 then reads discount information 8435 from the customer card, translates the binary-encoded numerical discount data into character data, translates the character data into graphics data, and sends the graphics data to video RAM 1735 (step 24055).

Next, CPU 1750 searches the product location index 11210 (step 24060) and if the UPC code is found in the

16

location index (step 24065), and the second field of the found entry is 1 (step 24070), CPU 1750 uses the third field of the found entry to point to a selected record of location text 11220. CPU 1750 translates this location text to pixel data and sends the pixel data to video RAM 1735. (step 24075). If the UPC code is not found in the location index (step 24065) or the second field of the found entry is not 1 (step 24070), CPU 1750 skips step 24075.

Next, CPU 1750 searches the product coordinate table 22510 (step 24080) and if the UPC code is found in the location index (step 24085), and the second field of the found entry is 1 (step 24090), CPU 1750 uses the third and fourth fields to generate an address signal for video ram 1735. CPU 1750 generates a data signal for video ram 1735 to display a block cursor at a location on CRT 1717 corresponding to the location of the product (step 24095). If the UPC code is not found in the location index (step 24085) or the second field of the found entry is not 1 (step 24090), CPU 1750 skips step 24095.

CRT controller 1737 reads video RAM 1735 to generate and send display signals to CRT 1717 (step 24100).

FIGS. 25A, 25B, 25C, and 25D show data flows within display kiosk 1710 during the processing of the method shown in FIGS. 24A and 24B. FIG. 25A shows a data flow during the processing of step 24050. CPU 1750 and program 21722 read a selected record of map image data 22420 and sends data 22420 to data port 1742 of video RAM 1735. CPU 1750 and program 21722 also send an address to address port 1740, to determine where pixels will be displayed on display 1717. As shown in FIG. 25A, the first four digits of the address signal specify the row on display 1717 and the last four digits specify the column on display 1717. Map image data 22420 is displayed beginning at row 0100, column 0100.

FIG. 25B shows a data flow within display kiosk 21710 when CPU 1750 executes step 24055. CPU 1750 and program 21722 read binary-encoded discount data 8435 from a customer card, translate the discount data to pixel data, and send the pixel data to data port 1742 of video RAM 1735. CPU 1750 and program 21722 also send an address signal 09000100 to address port 1740, to display the discount data beginning at row 900, column 100.

FIG. 25C shows a data flow within display kiosk 21710 when CPU 1750 executes step 24075. CPU 1750 and program 21722 read a selected record of ASCII location data 11220, translate the ASCII data to pixel data, and send the pixel data port 1742 of video RAM 1735. CPU 1750 and program 21722 also send an address signal 09500100 to address port 1740, to display the location text beginning at row 950, column 100.

FIG. 25D shows a data flow within display kiosk 1710 when CPU 1750 executes step 24095. CPU 1750 and program 21722 read a the third and fourth fields of an entry in coordinate table 22510 to generate an address signal for address port 1740. CPU 1750 and program 21722 generate a data signal for data port 1742 to generate a block cursor at a CRT display location corresponding to the address signal.

FIG. 26 shows a view of the CRT display 1717 after CPU 1750 performs the processing of FIGS. 24A and 24B. Pixel 26005 has coordinates (100, 100), meaning that pixel 26005 is in the row 100, column 100 of CRT display 1717. Pixel 26005 is the upper left of a display region for map image data. Pixel 26010, having coordinates (900, 100), is the upper left of a display region for coupon discount information. Pixel 26015, having coordinates (950, 100), is the upper left of a display region for product location informa-

5,890,135

17

tion. Pixel 26025, having coordinates (400,950), is the upper left of a display region for the block cursor when the block cursor is identifying the spacial location of Old World Pasta.

Thus, the preferred systems provide a convenient and stimulating shopping environment that allows the user to conveniently review the coupons stored on a customer card.

Additional advantages and modifications will readily occur to those skilled in the art. The invention in its broader aspects is therefore not limited to the specific details, representative apparatus, and illustrative examples shown and described. Accordingly, departures may be made from such details without departing from the spirit or the scope of Applicants' general inventive concept. The invention is defined in the following claims.

What is claimed is:

1. In a system including a communication device and a plurality of portable cards each having a memory, a method of operating the system comprising the steps of:

reading a first signal from the memory of a card in the plurality of cards, in response to a person presenting the card at the communication device, the first signal corresponding to a product;

generating, responsive to the first signal, a second signal containing an image of the product; and displaying the second signal.

2. The method of claim 1 further including

receiving a third signal corresponding to a product; and determining a price for the product depending on whether the first signal corresponds to the third signal.

3. The method of claim 1 wherein the system includes a cathode ray tube (CRT), and displaying step includes displaying the second signal on the CRT.

4. The method of claim 1 wherein the system includes a printer for printing on a substrate, and wherein the displaying step includes

printing, using the printer, the second signal on the substrate.

5. The method of claim 1 wherein the reading step includes reading a first signal corresponding to pricing information for a product.

6. The method of claim 1 wherein the system further includes an electronic display, and the displaying step includes

displaying the second signal on the electronic display.

7. The method of claim 1 wherein the displaying step includes displaying other information about the product with the image of the product.

8. The method of claim 1 wherein the displaying step includes displaying a verbal description of the product with the image of the product.

9. The method of claim 1 wherein the displaying step includes displaying a location of the product with the image of the product.

10. The method of claim 1 wherein the displaying step includes displaying pricing information for the product with the image of the product.

11. A retail system comprising:

a plurality of portable cards each having a card memory; a communication device;

first memory for storing a signal containing an image of a product;

a reader that reads a first signal from the card memory of a card in the plurality of cards, in response to a person presenting the card at the communication device, the first signal corresponding to a product;

18

a generator for accessing the first memory, using the first signal, to generate a second signal; and a display for displaying the second signal.

12. The system of claim 11 wherein each portable card includes a card memory for storing a first signal corresponding to pricing information for a product.

13. The system of claim 11 further including

a receiver means for receiving a third signal corresponding to a product; and

a determiner means for determining a price for the product depending on whether the first signal corresponds to the third signal.

14. The system of claim 11 wherein the display includes an electronic display.

15. The system of claim 11 wherein the display includes a cathode ray tube.

16. The system of claim 11 wherein the display includes a printer.

17. The system of claim 11 wherein the generator includes circuitry that generates a second signal containing the image of the product and other information about the product.

18. The system of claim 11 wherein the generator includes circuitry that generates a second signal containing the image of the product and a verbal description of the product.

19. The system of claim 11 wherein the generator includes circuitry that generates a second signal containing the image of the product and a location of the product.

20. The system of claim 11 wherein the generator includes circuitry that generates a second signal containing the image of the product and pricing information for the product.

21. In a system including a plurality of portable cards each having a memory, a first communication device, and a checkout area having a second communication device, a method of operating the system comprising the steps of:

a first reading step of reading a first signal from the memory of a card in the plurality of cards, in response to a person presenting the card at the communication device, the first signal corresponding to a product;

generating, responsive to the first signal, a second signal containing an image of the product; displaying the second signal;

a second reading step of reading the first signal from the memory of the card, in response to a person presenting the card at the second communication device;

receiving a third signal corresponding to a product; and determining a price for the product depending on whether the first signal, read in the second reading step, corresponds to the third signal.

22. The method of claim 21 wherein the system includes a cathode ray tube (CRT), and displaying step includes displaying the second signal on the CRT.

23. The method of claim 21 wherein the system includes a printer for printing on a substrate, and wherein the method includes

printing, using the printer, the second signal on the substrate.

24. The method of claim 21 wherein the second reading step includes reading a first signal corresponding to pricing information for a product.

25. The method of claim 21 wherein the system further includes an electronic display, and the displaying step includes

displaying the second signal on the electronic display.

26. The method of claim 21 wherein the displaying step includes displaying other information about the product with the image of the product.

5,890,135

19

27. The method of claim 21 wherein the displaying step includes displaying a verbal description of the product with the image of the product.

28. The method of claim 21 wherein the displaying step includes displaying a location of the product with the image of the product.

29. The method of claim 21 wherein the displaying step includes displaying pricing information for the product with the image of the product.

30. In a system including a plurality of product areas, a plurality of portable cards each having a memory, a first communication device, and a checkout area having a second communication device, a method of operating the system comprising the steps of:

reading a first signal from the memory of a card in the plurality of cards, in response to a person presenting the card at the first communication device, the first signal corresponding to a product in one of the product areas; displaying, responsive to the first signal, an image of the product;

removing the product from one of the product areas; and reading the first signal from the memory of the card, in response to a person presenting the card at the second communication device.

31. The method of claim 30 wherein the reading step includes reading a first signal corresponding to pricing information for a product.

20

32. The method of claim 30 wherein the system further includes an electronic display, and the displaying step includes

displaying on the electronic display.

33. The method of claim 30 wherein the system further includes a cathode ray tube (CRT), and displaying step includes

displaying on the CRT.

34. The method of claim 30 wherein the system further includes a printer for printing on a substrate, and wherein the displaying step includes

using the printer to display on the substrate.

35. The method of claim 30 wherein the displaying step includes displaying other information about the product with the image of the product.

36. The method of claim 30 wherein the displaying step includes displaying a verbal description of the product with the image of the product.

37. The method of claim 30 wherein the displaying step includes displaying a location of the product with the image of the product.

38. The method of claim 30 wherein the displaying step includes displaying pricing information for the product with the image of the product.

* * * * *

AO 440 (Rev. 10/93) Summons in a Civil Action

UNITED STATES DISTRICT COURT ORIGINAL

NORTHERN DISTRICT OF GEORGIA

SUMMONS IN A CIVIL CASE

SOFTCARD SYSTEMS, INC.

v.

CASE NUMBER:

1 03 CV 85

TARGET CORPORATION and
VISA U.S.A., INC.

TO C.T. Corporation System
Registered agent for TARGET CORPORATION
1201 West Peachtree Street, NE
Atlanta, Georgia 30361

YOU ARE HEREBY SUMMONED and required to serve upon PLAINTIFF'S ATTORNEY (name and address)

John L. North
Malvern U. Griffin, III
William R. Silverio
John D. Hamann
Sutherland Asbill & Brennan LLP
999 Peachtree Street, N.E.
Atlanta, Georgia 30309-3996

an answer to the complaint which is herewith served upon you, within 20 days
after service of this summons upon you, exclusive of the day of service. If you fail to do so, judgment by default will be
taken against you for the relief demanded in the complaint. You must also file your answer with the Clerk of this Court
within a reasonable period of time after service.

CLERK **LUTHER D. THOMAS**

DATE NOV 25 2003


(BY) DEPUTY CLERK

AO 440 (Rev. 10/93) Summons in a Civil Action

RETURN OF SERVICE

Service of the Summons and complaint was made by me ⁽¹⁾	DATE
NAME OF SERVER (<i>PRINT</i>)	TITLE

Check one box below to indicate appropriate method of service

- ☐ Served personally upon the third-party defendant. Place where served: _____
- ☐ Left copies thereof at the defendant's dwelling house or usual place of abode with a person of suitable age and discretion then residing therein.
Name of person with whom the summons and complaint were left: _____
- ☐ Returned unexecuted: _____
- ☐ Other (specify): _____

STATEMENT OF SERVICE FEES

TRAVEL	SERVICES	TOTAL
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DECLARATION OF SERVER

I declare under penalty of perjury under the laws of the United States of America that the foregoing information contained in the Return of Service and Statement of Service Fees is true and correct.

Executed on _____ Date _____ Signature of Server _____

Address of Server _____

(1) As to who may serve a summons see Rule 4 of the Federal Rules of Civil Procedure.

AO 440 (Rev. 10/93) Summons in a Civil Action

UNITED STATES DISTRICT COURT

ORIGINAL

NORTHERN DISTRICT OF GEORGIA

SUMMONS IN A CIVIL CASE

SOFTCARD SYSTEMS, INC.

v.

CASE NUMBER:

1 03 CV 3585

TARGET CORPORATION and
VISA U.S.A., INC.

TO C.T. Corporation System
Registered agent for VISA U.S.A., INC.
1201 West Peachtree Street, NE
Atlanta, Georgia 30361

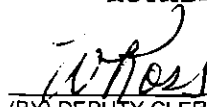
YOU ARE HEREBY SUMMONED and required to serve upon PLAINTIFF'S ATTORNEY (name and address)

John L. North
Malvern U. Griffin, III
William R. Silverio
John D. Hamann
Sutherland Asbill & Brennan LLP
999 Peachtree Street, N.E.
Atlanta, Georgia 30309-3996

an answer to the complaint which is herewith served upon you, within 20 days
after service of this summons upon you, exclusive of the day of service. If you fail to do so, judgment by default will be
taken against you for the relief demanded in the complaint. You must also file your answer with the Clerk of this Court
within a reasonable period of time after service.

CLERK **LUTHER D. THOMAS**

DATE **NOV 25 2003**


(BY) DEPUTY CLERK

AO 440 (Rev. 10/93) Summons in a Civil Action

RETURN OF SERVICE		
Service of the Summons and complaint was made by me ⁽¹⁾	DATE	
NAME OF SERVER (<i>PRINT</i>)	TITLE	
<i>Check one box below to indicate appropriate method of service</i>		
<input type="checkbox"/> Served personally upon the third-party defendant. Place where served: _____ _____		
<input type="checkbox"/> Left copies thereof at the defendant's dwelling house or usual place of abode with a person of suitable age and discretion then residing therein. Name of person with whom the summons and complaint were left: _____		
<input type="checkbox"/> Returned unexecuted: _____ _____ _____		
<input type="checkbox"/> Other (specify): _____ _____ _____		
STATEMENT OF SERVICE FEES		
TRAVEL	SERVICES	TOTAL
DECLARATION OF SERVER		
<p>I declare under penalty of perjury under the laws of the United States of America that the foregoing information contained in the Return of Service and Statement of Service Fees is true and correct.</p> <p>Executed on _____ <div style="display: flex; justify-content: space-between; width: 100%;"> Date Signature of Server </div> <div style="text-align: center; margin-top: 20px;"> Address of Server </div> </p>		

(1) As to who may serve a summons see Rule 4 of the Federal Rules of Civil Procedure.